BOSTON UNIVERSITY
SCHOOL OF EDUCATION

LIBRARY

Ed.
Thesis
Ed.D.
Dean, S.E.
1949
stored

The Gift of Stuart E. Dean.

FOR REFERENCE

NOT TO BE TAKEN FROM THIS ROOM

CAT. NO. 1935

LIBRARY BUREAU

31486

Ed,
Thesis
Ed.D.
Dean, S.E.
1949
stored

BOSTON UNIVERSITY

SCHOOL OF EDUCATION

Thesis

A STUDY TO DETERMINE THE RELATIONSHIPS BETWEEN PREFERENCES AND ACHIEVEMENT

by

Stuart Ernest Dean

(B.S. in Ed., Boston University, 1933)

(Ed.M., Boston University, 1935)

Submitted in partial fulfillment of

the requirements for the degree of

Doctor of Education

1949

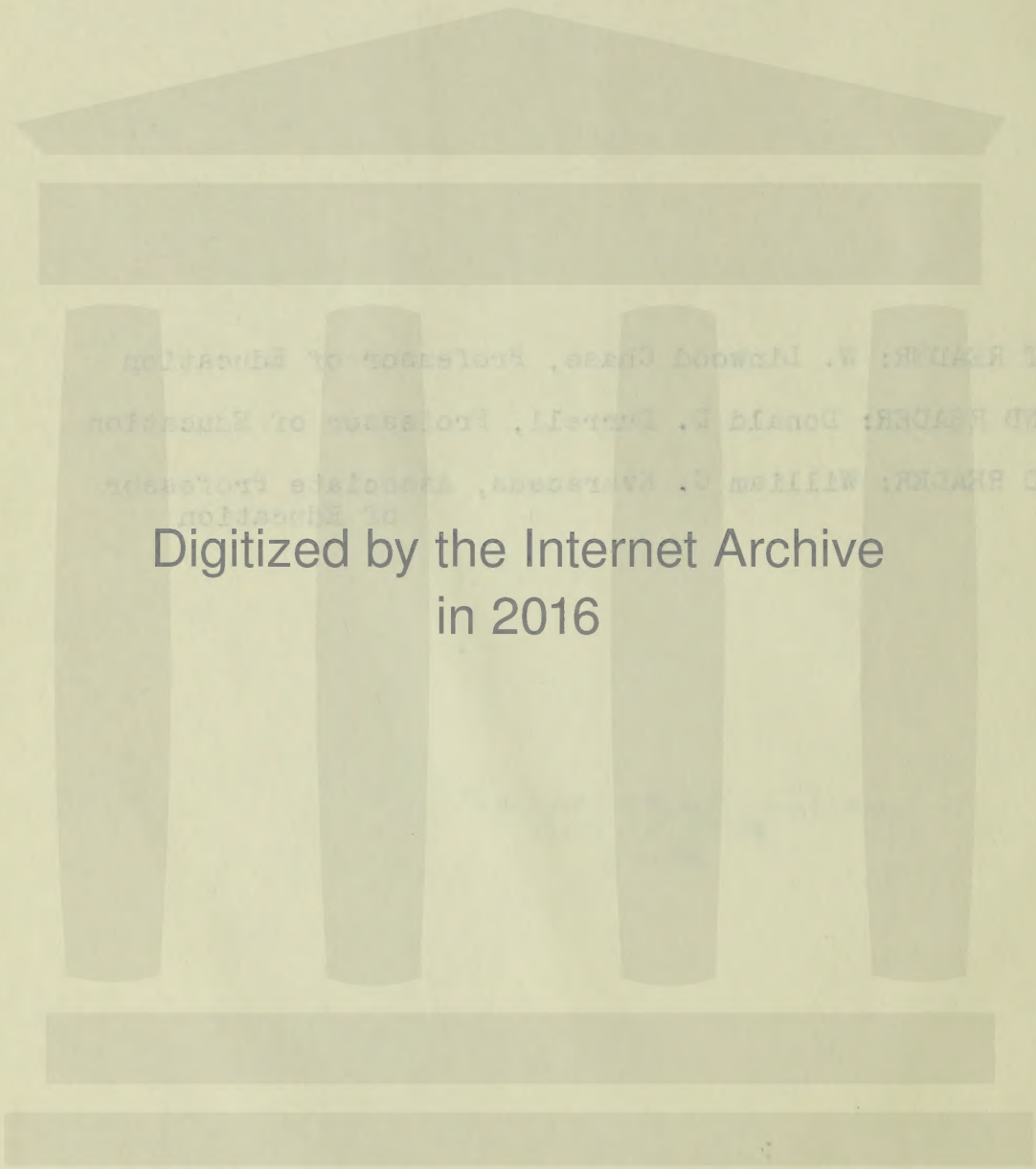
Boston University
School of Education
Library

School of Education
Oct. 10 1949
31486

FIRST READER: W. Linwood Chase, Professor of Education

SECOND READER: Donald D. Durrell, Professor of Education

THIRD READER: William C. Kvaraceus, Associate Professor of Education



Digitized by the Internet Archive
in 2016

https://archive.org/details/studytodetermine00dean

ACKNOWLEDGMENTS

The writer wishes to express his appreciation to Dr. W. Linwood Chase, Professor of Education, Boston University School of Education, for his help in planning and carrying out this study; to Dean Donald D. Durrell, Dr. William C. Kvaraceus, and Dr. Walter N. Durost for their guidance and help; and to all superintendents, principals, teachers, and students who cooperated in the investigation.

ACKNOWLEDGMENTS

The writer wishes to express his appreciation to Dr. W. Linwood Chase, Professor of Education, Boston University School of Education, for his help in planning and carrying out this study; to Dean Donald D. Durrell, Dr. William G. Everson, and Dr. Walter A. Dyrenforth for their guidance and help; and to all superintendents, principals, teachers, and students who cooperated in the investigation.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	DESCRIPTION OF THE PROBLEM	1
	Current Educational Problems	2
	Improvement of the Quality of Education	5
	Scientific Investigation	6
	Determination of Educational Objectives	7
	Psychology of Learning	10
	Interests of the Learner	12
	Intrinsic Motivation	13
	The "Whole" Child	14
	Unified Learning	15
	Preference	17
	Interest and Effort	18
	Summary	22
	Statement of the Problem	23
II.	REVIEW OF LITERATURE AND RESEARCH	24
	Contributions of Thorndike	24
	Other Early Investigations	28
	Investigations of Fryer	35
	Subject Preferences of Elementary School Children	40
	Current Investigations	48
	Review of Literature in the Field of Interests	57
	Summary	64
III.	PROCEDURAL ORGANIZATION OF THE STUDY	65
	New England Subject Preference Study	65
	Delimitations	68
	Selection of the Sample	69
	Achievement Testing	70
IV.	ANALYSIS OF THE DATA	72
	Organization of the Analysis of the Data	72
	Initial Measures--Matching Sex Groups	73
	Statistical Treatment	75
	First Quartile Preferences vs. Fourth Quartile Preferences	76
	Summary: Quartile Preferences	128
	Educational Significance of Quartile Preferences	130

TABLE OF CONTENTS

CHAPTER PAGE

I. DESCRIPTION OF THE PROBLEM 1

Current Educational Problems. 2
Improvement of the Quality of Education 5
Scientific Investigation. 6
Determination of Educational Objectives 7
Psychology of Learning. 10
Interests of the Learner. 12
Learning Motivation. 15
The "Whole" Child 16
Unified Learning. 18
Preference. 17
Interest and Effort 18
Summary 22
Statement of the Problem. 25

II. REVIEW OF LITERATURE AND RESEARCH. 29

Contributions of Thorndike. 29
Other Early Investigations. 28
Investigations of Dyer 35
Subject Preferences of Elementary School Children. 40
Current Investigations. 46
Review of Literature in the Field of Interests. 57
Summary 64

III. PROCEDURAL ORGANIZATION OF THE STUDY 66

New England Subject Preference Study. 65
Delimitations 66
Selection of the Sample 69
Achievement Testing 70

IV. ANALYSIS OF THE DATA 72

Organization of the Analysis of the Data. . . . 72
Initial Measures--Matching Sex Groups 73
Statistical Treatment 75
First Quartile Preferences vs. Fourth Quartile Preferences 76
Summary: Quartile Preferences 128
Educational Significance of Quartile Preferences 130

CHAPTER PAGE

Achievement of Preference Groups vs. Achievement of Non-Preference Groups. 133
Summary: Achievement of Preference and Non-Preference Groups. 184
Educational Significance of Preference Differences. 186
Representativeness of the Sample 189
Summary of Representativeness of the Sample. . 195

V. SUMMARY AND CONCLUSIONS 196

Preferences of First Achievement Quartile vs. Preferences of Fourth Achievement Quartile . 196
By Preferences. 196
By Sexes. 197
By Subjects 198
Achievement of Preference Groups vs. Achievement of Non-Preference Groups. 199
By Preferences. 199
By Sexes. 200
By Subjects 200
Tabulation of Results. 202
Conclusions. 203

VI. SUGGESTIONS FOR FURTHER STUDY 207

BIBLIOGRAPHY. 209

APPENDIX. 213

A. Unpublished Masters' Theses in the Boston University Subject Preference Study 214

B. Tables Showing Rank Order of Subject Preferences in the New England Fifth Grades . . . 216

C. Subject Preference Check List 219

CHAPTER PAGE

LIST OF TABLES

TABLE PAGE

1. Chronological Ages of Selected Sample. 75

2. Composite Achievement of Selected Sample 75

3. Reading Comprehension, Boys, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile. 79

4. Reading Comprehension, Boys, Comparison of Combined First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile 80

5. Reading Comprehension, Girls, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile. 81

6. Reading Comprehension, Girls, Comparison of Combined First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile 82

7. Reading Comprehension, Boys and Girls, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile. 83

8. Reading Comprehension, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile. 84

9. Reading Vocabulary, Boys, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile 85

10. Reading Vocabulary, Boys, Comparison of Combined First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile 86

11. Reading Vocabulary, Girls, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile. 87

12. Reading Vocabulary, Girls, Comparison of First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile 88

TABLE PAGE

13. Reading Vocabulary, Boys and Girls, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile. 89

14. Reading Vocabulary, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile 90

15. Combined Reading, Boys, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile 91

16. Combined Reading, Boys, Comparison of First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile. 92

17. Combined Reading, Girls, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile 93

18. Combined Reading, Girls, Comparison of Combined First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile. 94

19. Combined Reading, Boys and Girls, Comparison of First Preferences for Reading, Between First Quartile and Fourth Quartile. 95

20. Combined Reading, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Reading, Between First Quartile and Fourth Quartile 96

21. Arithmetic Fundamentals, Boys, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 97

22. Arithmetic Fundamentals, Boys, Comparison of First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 98

23. Arithmetic Fundamentals, Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 99

24. Arithmetic Fundamentals, Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 100

TABLE PAGE

TABLE PAGE

25. Arithmetic Fundamentals, Boys and Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 101

26. Arithmetic Fundamentals, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile 102

27. Arithmetic Problems, Boys, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 103

28. Arithmetic Problems, Boys, Comparison of First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 104

29. Arithmetic Problems, Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 105

30. Arithmetic Problems, Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile . 106

31. Arithmetic Problems, Boys and Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 107

32. Arithmetic Problems, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 108

33. Combined Arithmetic, Boys, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 109

34. Combined Arithmetic, Boys, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile . 110

35. Combined Arithmetic, Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 111

TABLE PAGE

25. Arithmetic Fundamentals, Boys and Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 101

26. Arithmetic Fundamentals, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile 102

27. Arithmetic Problems, Boys, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 103

28. Arithmetic Problems, Boys, Comparison of First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 104

29. Arithmetic Problems, Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 105

30. Arithmetic Problems, Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile . 106

31. Arithmetic Problems, Boys and Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 107

32. Arithmetic Problems, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 108

33. Combined Arithmetic, Boys, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 109

34. Combined Arithmetic, Boys, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile . 110

35. Combined Arithmetic, Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile 111

TABLE PAGE

36. Combined Arithmetic, Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile 112

37. Combined Arithmetic, Boys and Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 113

38. Combined Arithmetic, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 114

39. English, Boys, Comparison of First Preferences for Language, Between First Quartile and Fourth Quartile. 115

40. English, Boys, Comparison of Combined First, Second, and Third Preferences for Language, Between First Quartile and Fourth Quartile. 116

41. English, Girls, Comparison of First Preferences for Language, Between First Quartile and Fourth Quartile. 117

42. English, Girls, Comparison of Combined First, Second, and Third Preferences for Language, Between First Quartile and Fourth Quartile. 118

43. English, Boys and Girls, Comparison of First Preferences for Language, Between First Quartile and Fourth Quartile 119

44. English, Boys, and Girls, Comparison of Combined First, Second, and Third Preferences for Language, Between First Quartile and Fourth Quartile 120

45. Spelling, Boys, Comparison of First Preferences for Spelling, Between First Quartile and Fourth Quartile. 121

46. Spelling, Boys, Comparison of Combined First, Second, and Third Preferences for Spelling, Between First Quartile and Fourth Quartile. 122

47. Spelling, Girls, Comparison of First Preferences for Spelling, Between First Quartile and Fourth Quartile. 123

TABLE PAGE

36. Combined Arithmetic, Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile 112

37. Combined Arithmetic, Boys and Girls, Comparison of First Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 112

38. Combined Arithmetic, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Arithmetic, Between First Quartile and Fourth Quartile. 114

39. English, Boys, Comparison of First Preferences for Language, Between First Quartile and Fourth Quartile. 115

40. English, Boys, Comparison of Combined First, Second, and Third Preferences for Language, Between First Quartile and Fourth Quartile. 116

41. English, Girls, Comparison of First Preferences for Language, Between First Quartile and Fourth Quartile. 117

42. English, Girls, Comparison of Combined First, Second, and Third Preferences for Language, Between First Quartile and Fourth Quartile. 118

43. English, Boys and Girls, Comparison of First Preferences for Language, Between First Quartile and Fourth Quartile 119

44. English, Boys, and Girls, Comparison of Combined First, Second, and Third Preferences for Language, Between First Quartile and Fourth Quartile 120

45. Spelling, Boys, Comparison of First Preferences for Spelling, Between First Quartile and Fourth Quartile. 121

46. Spelling, Boys, Comparison of Combined First, Second, and Third Preferences for Spelling, Between First Quartile and Fourth Quartile. 122

47. Spelling, Girls, Comparison of First Preferences for Spelling, Between First Quartile and Fourth Quartile. 123

TABLE PAGE

48. Spelling, Girls, Comparison of Combined First, Second, and Third Preferences for Spelling, Between First Quartile and Fourth Quartile. 124

49. Spelling, Boys and Girls, Comparison of First Preferences for Spelling, Between First Quartile and Fourth Quartile 125

50. Spelling, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Spelling, Between First Quartile and Fourth Quartile. . . . 126

51. Summary of Critical Ratios: Comparisons of First Quartile with Fourth Quartile, on the Basis of Achievement Scores: Boys, Girls and Boys and Girls Combined: First Preferences, and First, Second, and Third Preferences Combined. 127

52. Educational Significance of Differences in Percentages of Preferences 130

53. Reading Comprehension, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 135

54. Reading Comprehension, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 136

55. Reading Comprehension, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. . . . 137

56. Reading Comprehension, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 138

57. Reading Comprehension, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 139

58. Reading Comprehension, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 140

TABLE PAGE

48. Spelling, Girls, Comparison of Combined First, Second, and Third Preferences for Spelling, Between First Quartile and Fourth Quartile. 184

49. Spelling, Boys and Girls, Comparison of First Preferences for Spelling, Between First Quartile and Fourth Quartile 185

50. Spelling, Boys and Girls, Comparison of Combined First, Second, and Third Preferences for Spelling, Between First Quartile and Fourth Quartile. . . . 186

51. Summary of Critical Ratios: Comparisons of First Quartile with Fourth Quartile, on the Basis of Achievement Scores: Boys, Girls and Boys and Girls Combined: First Preferences, and First, Second, and Third Preferences Combined. 187

52. Educational Significance of Differences in Percentages of Preferences 190

53. Reading Comprehension, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 195

54. Reading Comprehension, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 196

55. Reading Comprehension, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 197

56. Reading Comprehension, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 198

57. Reading Comprehension, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 199

58. Reading Comprehension, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 140

TABLE PAGE

59. Reading Vocabulary, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 141

60. Reading Vocabulary, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 142

61. Reading Vocabulary, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 143

62. Reading Vocabulary, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. . 144

63. Reading Vocabulary, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 145

64. Reading Vocabulary, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 146

65. Combined Reading, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 147

66. Combined Reading, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 148

67. Combined Reading, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 149

68. Combined Reading, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. . 150

69. Combined Reading, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 151

TABLE PAGE

59. Reading Vocabulary, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 141

60. Reading Vocabulary, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 142

61. Reading Vocabulary, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 143

62. Reading Vocabulary, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 144

63. Reading Vocabulary, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 145

64. Reading Vocabulary, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 146

65. Combined Reading, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 147

66. Combined Reading, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 148

67. Combined Reading, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 149

68. Combined Reading, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. . 150

69. Combined Reading, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 151

TABLE PAGE

70. Combined Reading, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 152

71. Arithmetic Fundamentals, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 153

72. Arithmetic Fundamentals, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 154

73. Arithmetic Fundamentals, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 155

74. Arithmetic Fundamentals, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 156

75. Arithmetic Fundamentals, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 157

76. Arithmetic Fundamentals, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 158

77. Arithmetic Problems, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 159

78. Arithmetic Problems, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 160

79. Arithmetic Problems, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 161

80. Arithmetic Problems, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. . 162

TABLE PAGE

70. Combined Reading, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 182

71. Arithmetic Fundamentals, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 183

72. Arithmetic Fundamentals, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 184

73. Arithmetic Fundamentals, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 185

74. Arithmetic Fundamentals, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 186

75. Arithmetic Fundamentals, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 187

76. Arithmetic Fundamentals, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 189

77. Arithmetic Problems, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 189

78. Arithmetic Problems, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 190

79. Arithmetic Problems, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 191

80. Arithmetic Problems, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. . 192

TABLE PAGE

81. Arithmetic Problems, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 163

82. Arithmetic Problems, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 164

83. Combined Arithmetic, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 165

84. Combined Arithmetic, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 166

85. Combined Arithmetic, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. . . . 167

86. Combined Arithmetic, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 168

87. Combined Arithmetic, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 169

88. Combined Arithmetic, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 170

89. Language, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 171

90. Language, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 172

91. Language, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 173

TABLE

81. Arithmetic Problems, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 162

82. Arithmetic Problems, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 164

83. Combined Arithmetic, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 165

84. Combined Arithmetic, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 166

85. Combined Arithmetic, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. . . . 167

86. Combined Arithmetic, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 168

87. Combined Arithmetic, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 169

88. Combined Arithmetic, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 170

89. Language, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 171

90. Language, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 172

91. Language, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 173

TABLE PAGE

92. Language, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 174

93. Language, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 175

94. Language, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 176

95. Spelling, Boys, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 177

96. Spelling, Girls, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample. 178

97. Spelling, Boys and Girls Combined, Comparison of Mean Scores Between the First Preference Group and the Remainder of the Sample 179

98. Spelling, Boys, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 180

99. Spelling, Girls, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample 181

100. Spelling, Boys and Girls Combined, Comparison of Mean Scores Between the Combined First, Second, and Third Preference Group and the Remainder of the Sample. 182

101. Summary of Critical Ratios: Comparisons of Mean Achievement Scores, Between Preference and Non-Preference Groups: Boys, Girls, and Boys and Girls Combined: First Preferences and First, Second, and Third Preferences Combined. 183

102. Educational Significance of Differences in Mean Scores. 187

TABLE PAGE

TABLE PAGE

103. Comparison of Original Population with the Sample Study, Percentages of Preferences for Reading . . 191

104. Comparison of Original Population with the Sample Study, Percentages of Preferences for Arithmetic. 192

105. Comparison of Original Population with the Sample Study, Percentages of Preferences for Language. . 193

106. Comparison of Original Population with the Sample Study, Percentages of Preferences for Spelling. . 194

107. Significant Differences Between Comparison Groups 202

108. Rank Order of Subject Preferences, First Choices Only, of 13,483 Fifth Grade Children in New England. 216

109. Rank Order of Subject Preferences, First, Second, and Third Choices Combined of 13,483 Fifth Grade Children in New England 217

CHAPTER ONE

DESCRIPTION OF THE PROBLEM

The problem under investigation in this particular study is the determination of what relationships exist between expressed preferences, of fifth grade students, for school subjects and their comparative achievement in those subjects. The place and importance of the interests of children, in planning programs of education, has long been a matter of study and concern. Dewey, Thorndike, and Jersild have been among the prominent educators who have expressed opinions on this factor.

In this particular study an attempt is being made to analyze the subject preferences of children, with the thought that these preferences are expressions of basic interests of children, as these interests pertain to attitudes toward school and as they may be possible measures of intrinsic motivation. Throughout the ensuing development and description of this investigation the underlying objective remains that of seeking to determine any significant relationships between preferences and achievement, in the sense of seeking to contribute to the meager knowledge of the nature of educational interests and the uses to which they might be put.

CHAPTER ONE

DESCRIPTION OF THE PROBLEM

Current Educational Problems

One of the most significant trends on the contemporary American scene is the renewed interest and the basic concern over the problems confronting the institution of public education. That this problem is rife is evident on every hand. Every established medium of public expression is calling attention to the changing conditions, the increasing needs, the perplexing problems, and the serious economic factors underlying this crisis. Over the past four years a considerable amount of progress has been made in attacking the greatest single enemy of improving the schools; namely, public apathy and indifference of the layman. Even though actual constructive contributions may continue to lag, at least a very basic quality is being transmitted when the public-at-large shows indications of realizing the seriousness of the situation.

Social progress and the conditions of the times have brought forth a number of new elements which are beginning to crystallize the problems of public education. Certain socio-politico-economic factors have combined to give tremendous weight to this matter of needs of our schools today. For one thing, the recent war with all its uncertainties and disruptions upset the downward trend in the national birthrate. Now our schools are facing the problem of increasing pupil population for the next twelve years that will far exceed anything in their entire history. For another thing, due

Current Educational Problems

One of the most significant trends on the contemporary American scene is the renewed interest and the basic concern over the problems confronting the institution of public education. That this problem is rife is evident on every hand. Every established medium of public expression is calling attention to the changing conditions, the increasing needs, the perplexing problems, and the serious economic factors underlying this crisis. Over the past four years a considerable amount of progress has been made in attacking the greatest single enemy of improving the schools: namely, public apathy and indifference of the layman. Even though school constructive contributions may continue to lag, at least a very basic quality is being transmitted when the public-at-large shows indications of realizing the seriousness of the situation.

Social progress and the conditions of the times have brought forth a number of new elements which are beginning to crystallize the problems of public education. Certain socio-political-economic factors have combined to give tremendous weight to this matter of needs of our schools today. For one thing, the recent war with all its uncertainties and disruptions upset the downward trend in the national birthrate. Now our schools are facing the problem of increasing pupil population for the next twelve years that will far exceed anything in their entire history. For another thing, due

again to the upsetting economic elements of a war era, plus an additional deteriorating trend stemming from its own ranks, we are now faced with a shortage of teachers that will become seriously acute in the years just ahead. Thirdly, as a nation we have been caught in the embarrassing position of being woefully unprepared for the rising generation in terms of school housing accommodations. Already it has been estimated that the schools are now housing one-third more children than for which they were designed; and the full force is yet to hit. Again the war has tended to upset normal activities along this line; but the fact remains that the need is most realistic. Finally, there is a wide-spread discontent with the quality and value of the education being offered today. Even the best trained of our school products still have too many deficiencies as individuals and as citizens. It is not argued that the schools can do everything; but nevertheless it remains quite true, as former Commissioner Studebaker recently pointed out, that "too many of our young people are receiving an obsolete education."

When considered together these foregoing problems present a situation that is fraught with significance in its importance to the perpetuation and progress of the United States of America. Actually it might be said that there cannot safely be any minimizing or underestimating the meaning of all this. While it is evidently true that the American people have

never fully assessed the importance of education in a democracy, it is likewise true that there appears to be on the national scene a stirring and a growing realization that all this is a matter of gravest concern. In other words, thanks to some very direct, some openly militant, and some intelligently planned programs and campaigns, there is evidence that at last the problems of public education are beginning to assume a more rightful position in the national perspective. Indications of this are discernible in various groups ranging from the Federal Congress down to the many heterogeneous groups of parents on the local level. Molders of public opinion such as the press, the radio, and the pulpit are all contributing to this increased understanding. As a result of this activity we today as a national group are more aware of the problems and the needs and are more impressed with the seriousness of the situation, as it pertains to our schools, than ever before in our history.

When the day arrives that some of these problems will have been solved, and faith that this will be attained is based upon the American tradition of rising to the challenge, certain of the troublesome elements may eventually be eliminated from the basic problem. There is no attempt or desire here to dismiss lightly or to over-simplify the depth of these factors. The problems of the economic foundations of public education, of rising school costs, of inflationary

spirals as they affect capital outlay, of teacher recruitment, and of tremendous school populations are all matters of major proportions. Solutions to these problems will not come easily or without great national strain and economic stress. But, again it is suggested, they will come. It might be said that the solutions will follow in direct proportion to the effectiveness with which the needs are intelligently and clearly conveyed to the populace. For several of these solutions will be tangible and within reach of society-at-large.

Improvement of the Quality of Education

However, the problem raised in the fourth point, that of improving the quality of education, has tremendous implications for the workers in the field. Regardless of what degree of validity may be assigned to that charge, the fact remains that education, as a social science, has always a moral obligation to keep pace with the changing times. And this crisis in public school education itself is living testimony of the fact that times do change. The technological progress of the past half century has brought with it many disturbing by-products in terms of its effect upon the human personality. This, then, becomes the problem of any program of mass education: how to meet these changing social conditions as they occur about, and as they affect, the individual. In other words, if society attempts to meet the staggering needs

spirals as they affect capital outlay, of teacher recruitment, and of tremendous school populations are all matters of major proportions. Solutions to these problems will not come easily or without great national strain and economic stress. But, again it is suggested, they will come. It might be said that the solutions will follow in direct proportion to the effectiveness with which the needs are intelligently and clearly conveyed to the populace. For several of these solutions will be tangible and within reach of society-at-large.

Improvement of the Quality of Education

However, the problem raised in the fourth point, that of improving the quality of education, has tremendous implications for the workers in the field. Regardless of what degree of validity may be assigned to that charge, the fact remains that education, as a social science, has always a moral obligation to keep pace with the changing times. And this crisis in public school education itself is living testimony of the fact that times do change. The technological progress of the past half century has brought with it many disturbing by-products in terms of its effect upon the human personality. This, then, becomes the problem of any program of mass education: how to meet these changing social conditions as they occur about, and as they affect, the individual. In other words, if society attempts to meet the staggering needs

represented by the problems confronting public school education today, then it behooves the social institution of public school education to reciprocate by rendering greater service to society. In its essence it becomes as simple as returning value commensurate with the greater investment made. If a particular program of education is going to cost a dollar more than formerly, then that program must be worth a dollar more.

Scientific Investigation

For fifty years now education in this country has been characterized by what might be called the "scientific" approach. The objective researches, experimental studies, investigative approaches, and analytical inquiries have been quite extensive. But, despite all these efforts, in an inexact science such as this, the problems increase and the difficulties multiply. Furthermore, again despite all this constructive advance, there still remains too great a lag between frontier progress and practical application. The science of education must do its part by placing its own house in order in terms of providing a program that is effective, is efficient, and which meets the needs of all the people.

In order to do this, we need a continued program of scientific advance that will probe into the very complex areas of improving the quality of teaching, of increasing the efficacy of learning, and of analyzing all the many remote and abstract components that make up a social science. Scientific

represented by the problems confronting public school education today, then it behooves the social institution of public school education to reciprocate by rendering greater service to society. In its essence it becomes as simple as returning value commensurate with the greater investment made. If a particular program of education is going to cost a dollar more than formerly, then that program must be worth a dollar more.

Scientific Investigation

For fifty years now education in this country has been characterized by what might be called the "scientific" approach. The objective researches, experimental studies, investigative approaches, and analytical inquiries have been quite extensive. But, despite all these efforts, in an instance such as this, the problems increase and the difficulties multiply. Furthermore, again despite all this constructive advance, there still remains too great a lag between frontier progress and practical application. The science of education must do its part by placing its own house in order in terms of providing a program that is effective, is efficient, and which meets the needs of all the people.

In order to do this, we need a continued program of scientific advance that will probe into the very complex areas of improving the quality of teaching, of increasing the efficacy of learning, and of analyzing all the many remote and abstract components that make up a social science. Scientific

advance must continue to remain a keystone of all educational efforts and all professional endeavors must be dedicated to the task of meeting the needs of an increasingly confounded society.

A fundamental approach to this matter of improving the quality of teaching and of learning lies in the area of continued scientific investigation into the physiological and psychological factors that define the learning process. When we accept the modern definition of education as being a concept which connotes change in the behavior of the individual we commit ourselves to a thorough-going study and concern for the complex nature of the individual. We are brought to a realization that our entire efforts to direct learning must be focussed on the needs, the desires, the abilities, and the potentialities resident in the individual.

Determination of Educational Objectives

However, to this premise must be added recognition of the fact that, in addition to designing our educational program to meet the needs of the individual, we must by the same token take full cognizance of the broader needs of this educational program as determined by the society of which the individual is a member. In the broadest interpretation the society determines the ends of education, while the educational program controls the means. In terms of determining educational objectives it might be said that the formulation

of any program of mass educational endeavor implies a blending of the desired goals, expressed by society, with the individual objectives, based upon personal needs. Actually, however, and likewise fortunately, in the public schools of America today we are dedicated to a program which incorporates these two factors. This is true today because of the political history, the social philosophy, and the established practices of our national creed. The Constitution sets the pace in its dedication to the equal standing and the personal dignity of the common man. Therefore, it can be safely said that the aims of our education, as prescribed by our society, are completely in accord with the aims of the "scientific" approach to education, as indicated by primary values assessed upon the needs of the individual. There is no conflict extant in the philosophy of American education, a conflict that might result whenever the aims of a society disagree with the established principles of educational psychology.

When it is thus considered that educational psychology inevitably assumes the role of handmaiden to educational philosophy and sociology, it is apparent that any program for mass education, whose objectives have been determined in such a manner, has the unquestioned advantage of consistency as to purpose and as to methods. Our national philosophy defines our educational purpose, which might be said to be the fullest development of the individual to his maximum capabilities,

to the end that he become a worthy, contributing, participating member of society. Our educational psychology describes the methods for attaining this purpose, methods which consist of focussing attention upon the peculiar uniqueness of the individual so that his program of education might evolve from his own strengths and weaknesses; from his interests, attitudes, and ideals; and from complete concern for his own personality. Even though it may be conceded that these two components are in complete harmony in theory, none-the-less it must be realized that there is inevitably some degree of conflict in the application of these theories. In fact it has sometimes been said that there is a perennial clash between the nature of the learner and the nature of the curriculum. For, recognizing on the one hand the complete heterogeneity of the learners, we must by the same token, recognize a high degree of standardization of desired outcomes, in terms of these same afore-mentioned qualities: social worth, constructive citizenship, and national conscience. If we accept the range of existent variance on the starting end of the scale and the unanimity of agreement on the finishing end of the scale, we come to a sober realization that there must be some common meeting place, some area of agreement as an initial approach, some accepted point of view that will permit a program of diversified education to operate toward a common goal. Actually in the realm of this conflict, as it has been

described here, it must be realized that practical teaching prowess and successful educational planning have always comprised a skillful adaptation of one to the other. Basically, organized programs of education have always taken a practical point of view in recognizing the commonness of purpose, together with the variance of means; and they have constantly striven for a happy and successful blending of the two into a unified process.

Psychology of Learning

The basic essential to mental growth is the presence of a situation to which the learner actively responds. In order for any experience to become effective it has to be recognized. The nervous system is so constituted that any reaction to any experience tends to affect the entire organism, with the result that some form of discernible behavior change is evidenced. This, in essence, is the challenge of any program of education: to provide the necessary experiences and to guide the resulting behavior changes until the individual arrives at the stage of competent self-direction. In order to permit this situation to develop, in order to allow experiences and impressions to become effective, it is fundamentally necessary that one incontrovertible quality be attained. The attention or the interest of the learner must be attracted. We have come to realize that no learning can take place if this unification and coordination of behavior in the direction of a

described here, it must be realized that practical teaching prowess and successful educational planning have always compelled a skillful adaptation of one to the other. Basically, organized programs of education have always taken a practical point of view in recognizing the consonance of purpose, together with the variance of means; and they have constantly striven for a happy and successful blending of the two into a unified process.

Psychology of Learning

The basic essential to mental growth is the presence of a situation to which the learner actively responds. In order for any experience to become effective it has to be recognized. The nervous system is so constituted that any reaction to any experience tends to affect the entire organism, with the result that some form of discernible behavior change is evidenced. This, in essence, is the challenge of any program of education: to provide the necessary experiences and to guide the resulting behavior changes until the individual arrives at the stage of competent self-direction. In order to permit this situation to develop, in order to allow experiences and impressions to become effective, it is fundamentally necessary that one incontrovertible quality be retained. The attention or the interest of the learner must be attracted. We have come to realize that no learning can take place if this unification and coordination of behavior in the direction of a

predominant activity does not develop. The function of attention is to facilitate response to an immediate stimulus, while at the same time it inhibits response to the many other constantly competing stimuli. No behavior change will result unless and until some impression is experienced, and this experience does not transpire unless the individual reacts to the impression.

Some questions have been raised over the respective merits of attention and interest, as to which has genetic priority in the life of the learner. Actually the two factors are inseparable and they may be considered as developing simultaneously. By way of distinguishing between the two some attempt might be made to consider interest as a special feeling which accompanies direct attention to some object. Furthermore, it can be suggested that interest is usually less dependent upon the immediate aspects of an objective situation than is attention, and tends more to be a function and a product of the accumulated experiences of the individual. Attention lacks the stability of interest. And, since true teaching seeks to establish something more than transitory experiences, basic consideration of this factor seems to be better made under the heading of interest.

predominant activity does not develop. The function of attention is to facilitate response to an immediate stimulus, while at the same time it inhibits response to the many other constantly competing stimuli. No behavior change will result unless and until some impression is experienced, and this experience does not transpire unless the individual reacts to the impression.

Some questions have been raised over the respective merits of attention and interest, as to which has genetic priority in the life of the learner. Actually the two factors are inseparable and they may be considered as developing simultaneously. By way of distinguishing between the two some attempt might be made to consider interest as a special feeling which accompanies direct attention to some object. Furthermore, it can be suggested that interest is usually less dependent upon the immediate aspects of an objective situation than is attention, and tends more to be a function and a product of the accumulated experiences of the individual. Attention lacks the stability of interest. And, since the teaching seeks to establish something more than transitory experiences, basic consideration of this factor seems to be better made under the heading of interest.

Interests of the Learner

Modern education appears to be agreed upon the essential concept that effective teaching begins with regard for the learner's "native" interests, insofar as these may be ascertained. From another point of view modern teaching methods appear committed to the realization that motivation, as a procedural step, must stem from some immediate area of familiarity, recognition, or inherent desire. Actually, considered in its strictest sense, no teaching could hope to accomplish anything if some measure of interest were not present, for that teaching process would lack a point of departure. It is futile and extravagant to attempt to operate a learning program that does not spring from some area of interest. It would be analagous to trying to teach in a complete void. Somewhere and somehow, in every teaching-learning relationship, that spark of familiarity, interest, or attention must be kindled. Otherwise the undertaking lacks a base from which to start. William James suggested the validity for this point of view when he said:

> Any object not interesting in itself may become interesting through becoming associated with an object in which an interest already exists. The two associated objects grow, as it were, together; the interesting portion sheds its quality over the whole; and thus things not interesting in their own right borrow an interest which becomes as real and as strong as any natively interesting thing. The odd circumstance is that the borrowing does not impoverish the source, the objects taken together

Interests of the Learner

being more interesting perhaps than the original interesting portion was by itself.[1]

Intrinsic Motivation

This concept of educational approach today is popularly called the level of intrinsic motivation. Motivation has long been accepted as being a primary requisite to establishing rapport for learning. However, schools have tended to function traditionally on a level of extrinsic motivation in which the learners have been coerced into "learning" through the use of a series of factors residing outside the true learning situation. This has been true largely because of a failure to understand some of the essential truths and principles involved in effective learning. For too long a period organized education has sought to accomplish its purposes through the media of enforced stimulation which attached false values to the task in hand. Now, however, we have come to realize that intrinsic motivation--that type which evolves from the learner's own purposing, planning, and appraisal of need--is fundamental. It has been accepted today that intrinsic motivation is the only legitimate type. Concurrent with this understanding has come the realization that maintenance of interest is a highly important factor in intrinsic motivation. Therefore, again the conclusion seems inescapable that any program of

[1]William James, Talks to Teachers (New York: Henry Holt, 1916), p. 94.

being more interesting perhaps than the original interesting portion was by itself.[1]

Intrinsic Motivation

This concept of educational approach today is popularly called the level of intrinsic motivation. Motivation has long been accepted as being a primary requisite to establishing rapport for learning. However, schools have tended to function traditionally on a level of extrinsic motivation in which the learners have been coerced into "learning" through the use of a series of factors residing outside the true learning situation. This has been true largely because of a failure to understand some of the essential truths and principles involved in effective learning. For too long a period organized education has sought to accomplish its purposes through the media of enforced stimulation which attached false values to the task in hand. Now, however, we have come to realize that intrinsic motivation--that type which evolves from the learner's own purposing, planning, and appraisal of need--is fundamental. It has been accepted today that intrinsic motivation is the only legitimate type. Concurrent with this understanding has come the realization that maintenance of interest is a highly important factor in intrinsic motivation. Therefore, again the conclusion seems inescapable that any program of

---

[1] William James, Talks to Teachers (New York: Henry Holt, 1918), p. 94.

education will be extremely short-sighted if it fails to provide for recognition of the value and place of initial interest on the part of the learner.

The "Whole" Child

In our consideration of optimum methods for setting the stage for effective learning and in our desire to avail ourselves of the conclusions of psychological research we have increasingly come to adopt the phrase "the whole child." Despite the fact that this expression has been frequently overworked and commonly misinterpreted, the fact remains that it still contains vitally important implications. For one thing we have only to examine the increase in responsibilities and functions which have been thrust upon the school in recent times. Whereas at one time the school was primarily dedicated to the task of intellectual development of selected children; now, due both to advancing knowledge as well as to changing social conditions, the growing demands upon the school have resulted in an extension of services to the point wherein the school is conducting a multi-sided approach to the "general" education of infinitely greater numbers of children. As has been intimated, this has evolved both from scientific progress to the effect that certain segments of the child's mind or body cannot be trained in isolation; as well as from the shifting nature of basic social institutions, such as the family, community life, and spiritual influences. The day is

education will be extremely short-sighted if it fails to provide for recognition of the value and place of initial interest on the part of the learner.

The "Whole" Child

In our consideration of optimum methods for setting the stage for effective learning and in our desire to avail ourselves of the conclusions of psychological research we have increasingly come to adopt the phrase "the whole child." Despite the fact that this expression has been frequently overworked and commonly misinterpreted, the fact remains that it still contains vitally important implications. For one thing we have only to examine the increase in responsibilities and functions which have been thrust upon the school in recent times. Whereas at one time the school was primarily dedicated to the task of intellectual development of selected children; now, due both to advancing knowledge as well as to changing social conditions, the growing demands upon the school have resulted in an extension of services to the point wherein the school is conducting a multi-sided approach to the "general" education of infinitely greater numbers of children. As has been intimated, this has evolved both from scientific progress to the effect that certain segments of the child's mind or body cannot be trained in isolation; as well as from the shifting nature of basic social institutions, such as the family, community life, and spiritual influences. The day is

long past when the educator could face up only to the intellectual needs of the child. The second important implication of this concept of the "whole child" lies in the area of personality adjustment in which we have come to a realization that a child is not a miniature adult, marking time in idle and useless preoccupation, who will one day suddenly spring into full-blown adulthood and citizenship. Our concern for this complete approach to childhood training has now brought us to an understanding that all the bewildering and conflicting forces and drives operating in people of an adult world today are similarly in effect and in operation among the children. In other words, the child is a complex creature who has his God-given share of conflicts, emotions, problems, strengths, and deficiencies; and any program of education, worthy of the name, must be fully conversant with the serious connotations of this inner heterogeneity as it affects the learning process.

Unified Learning

A study of the modern principles of the psychology of learning reveals a purposeful effort to embody the unified nature of learning. When it is accepted that learning is the organization and the adjustment of behavior which results from the interaction of a maturing organism with its environment, then it becomes readily apparent that any educational approach which fails to be extensive and inclusive is inadequate. The program of education seeks, through this interaction, to

long past when the educator could face up only to the intellectual needs of the child. The second important implication of this concept of the "whole child" lies in the area of personality adjustment in which we have come to a realization that a child is not a miniature adult, marking time in idle and useless preoccupation, who will one day suddenly spring into full-blown adulthood and citizenship. Our concern for this complete approach to childhood training has now brought us to an understanding that all the bewildering and conflicting forces and drives operating in people of an adult world today are similarly in effect and in operation among the children. In other words, the child is a complex creature who has his God-given share of conflicts, emotions, problems, strengths, and deficiencies; and any program of education, worthy of the name, must be fully conversant with the serious complications of this inner heterogeneity as it affects the learning process.

Unified Learning

A study of the modern principles of the psychology of learning reveals a purposeful effort to embody the unified nature of learning. When it is accepted that learning is the organization and the adjustment of behavior which results from the interaction of a maturing organism with its environment, then it becomes readily apparent that any educational approach which fails to be extensive and inclusive is inadequate. The program of education seeks, through this interaction, to

develop new forms of perception, mental imagery, coordination, and other physiological and psychological conditions. These conditions are all influenced by a quality which the psychologists agree upon as "insight." It further follows that the important but abstract values of training, such as understandings, attitudes, and meanings, are first nurtured by insights and subsequently strengthened with additional experiences and applications. In other words, the modern view of learning is characterized by the Gestalt theory which holds that learning is based upon perceptions which are regarded as primary wholes. A pattern is destroyed when it is broken up into its constiuent parts; the whole is more than a sum of its parts. This suggests that it is impossible to conceive a program of education that can be artificially applied out of its natural setting or subdivided into elemental factors. For by so doing certain other contextual backgrounds are set up which alter and affect the validity of the program. Today we have come to accept the finding that in order to develop a truly effective program of teaching and of learning we must so shape our plan that it will be founded upon the existence and acquisition of insight; that it will be paced to the ability of the learner; that it will be geared to the maturation growth of the learner; and that it will achieve a unified understanding. Such teaching is accomplished through encouragement, assistance, guidance, and the direction of behavior changes. The true role

of the teacher should be that of director of learning activities. This point of view and this philosophy of educational planning compel the necessity for knowing the pupil; for knowing intimately his background of experience, his interests and his preferences, his attitudes, his physical and mental health, his aptitudes; and, in fact, his complete repertoire of equipment for learning. For without sufficient knowledge of the nature and needs of the learner, the teacher may very often negate and frustrate learning through maladjustment to readiness. Therefore, upon the basis of this analysis, we are now able to appraise the true importance of the basic requisites to learning: insights--in terms of attention, interest, attitude, preferences, and ideals.

Preference

Thus we arrive at the expressed nature of the problem underlying this investigation. Basing a contention on the foregoing discussion that learning is a complex process, involving many diverse elements and areas, we arrive at a conclusion that, included among the necessary essentials to effective learning, is a factor to be known herein as "preference." The specific term "preference" is used advisedly since it is only one manifest aspect of a generic term implying attention, interest, and attitude. In the broadest sense preference may be considered to be one form of expression of the quality of insight, as insight is employed by the educational

psychologist. In other words, if it can be accepted that "insight" is basic to learning, then it is suggested that "preference" is a practical demonstration of the existence of insight. Or, to put it another way, "preference" may also be considered to be an aspect of the intrinsic type of motivation that is so inestimably regarded in terms of setting the stage for learning.

Interest and Effort

To extend the basis of reasoning that underlies the purpose of this investigation it is undoubtedly advisable to examine further this place of interest in the theory of education. Dewey, in a treatise Interest and Effort in Education,[2] has suggested there are two contributions to education which are made by a consideration of the place of interests. On the one hand he suggests that such an approach "protects us from a merely internal conception of mind."[3] In his development of this point he suggests that a true consideration and evaluation of the rightful place of interest in educational planning will avoid the dangers of abstractness, which he says is "The worst evil that infests education."[4] It appears that this abstractness becomes a matter of considering mental activity as a completely isolated, detached process carried on

---

[2]John Dewey, Interest and Effort in Education (Boston: Houghton Mifflin Company, 1913).

[3]Ibid., p. 92.

[4]Loc. cit.

in an area wholly removed from an everyday world of persons and things. It is his belief that when steps are taken to remove the educative process from direct concern with and consideration of first-hand subject matter which has meaning, then the "world of studies becomes a strange and peculiar world, because a world cut off from--abstracted from--the world in which pupils live and act and suffer."[5] On the other hand, Dewey also submits that concern with interests likewise protects us from a "merely external conception of subject matter."[6] Again he suggests that the truly vitalized program of education must seek to combine mind and subject matter to the ends of meaning and purpose.

> The doctrine of interests is not a short cut to "methods" of this sort. On the contrary it is a warning to furnish conditions such that the natural impulses and the acquired habits, as far as they are desirable, shall obtain subject-matter and modes of skill in order to develop their natural ends of achievement and efficiency. Interest, the identification of mind with the material and methods of a developing activity, is the inevitable result of the presence of such situations.[7]

This study is not proposing to establish "pupil preference" as an end or as a method in itself. Rather is it concerned with a discovery of pupil preferences as manifestations of conditions that lie behind those preferences and which compel them into action.

---

[5] Ibid., p. 93.

[6] Dewey, op. cit., p. 94.

[7] Ibid., p. 95.

In an attempt to ascertain possible areas of causal effect upon this matter of pupil preference for school subjects this study proposes to analyze subject preferences in their relation to school achievement. Nowhere throughout this study is there any intended intimation that a knowledge of preference factors and their relative effects upon school achievement is to be considered an educational end in itself. As a matter of fact much of our traditional thinking on the elementary school curriculum has tended toward an acceptance of these subject-matter areas as the purposeful ends of an elementary school education. Now we are awakening to a realization that these school subjects, standardized and traditionalized as many of them are, must not be considered the goals of an elementary school program but must instead be considered means to the ultimate development of final values. The implication is made that in order to do a more effective piece of work in curriculum planning and in over-all educational development, greater attention will have to be paid to the significance inherent in the findings pertaining to pupil preferences for school subjects. Again it is not suggested that this planning or this thinking should take the form of bending the curriculum to coincide with the whims of the pupils, but it is suggested that intelligent educational thinking cannot afford to fail to appraise the significance and importance of the findings resulting from a study of preference in relation

In an attempt to ascertain possible areas of causal effect upon this matter of pupil preference for school subjects this study proposes to analyze subject preferences in their relation to school achievement. Nowhere throughout this study is there any intended intimation that a knowledge of preference factors and their relative effects upon school achievement is to be considered an educational end in itself. As a matter of fact much of our traditional thinking on the elementary school curriculum has tended toward an acceptance of these subject-matter areas as the purposeful ends of an elementary school education. Now we are awakening to a realization that these school subjects, standardized and traditionalized as many of them are, must not be considered the goals of an elementary school program but must instead be considered means to the ultimate development of final values. The implication is made that in order to do a more effective piece of work in curriculum planning and in over-all educational development, greater attention will have to be paid to the significance inherent in the findings pertaining to pupil preferences for school subjects. Again it is not suggested that this planning or this thinking should take the form of bending the curriculum to dovetail with the whims of the pupils, but it is suggested that intelligent educational thinking cannot afford to fail to appraise the significance and importance of the findings resulting from a study of preference in relation

to achievement.

In a study on interests Thorndike has revealed that lack of intrinsic interest is a handicap to learning.[8] Through a series of experiments carried on with adults in learning what is uninteresting he submits that "though this fact be true, that lack of intrinsic interest is a handicap, the handicap is small."[9] It is his belief that the rate of learning does not necessarily suffer greatly even when what is to be learned is utterly valueless to the learner. He further suggests that "Extrinsic interests are adequate to maintain learning when intrinsic interests are not available or require an undue expense of time, labor, or skill on the part of the teacher."[10] However, it should be kept in mind that these experiments were conducted on the level of adult learning. To summarize his findings on this vital subject, Thorndike concludes:

> The fundamental physiology and psychology of the influence of intrinsic interests upon learning is much the same whether the learners are children, adolescents, young adults, or old adults. But in respect of the nature of the extrinsic interests upon which the teacher may rely in these four groups, there are important differences. The adults, having had far more world experiences, should know what they want and what the values to them of various sorts of knowledge, power, and skill will be, much better than children. Adults

---

[8] Edward L. Thorndike, Adult Interests (New York: Macmillan Company, 1935), p. 50.

[9] Loc. cit.

[10] Ibid., p. 53.

> are consequently more critical and less ready to study something to please the teacher, or because it is customary and others are studying it, or because the authorities say it will be beneficial. They should be more earnest and ambitious in their better realization of what it will do for their welfare. There should be less loss from relying on extrinsic interests in adults than in juvenile education.[11]

If this be true then we again arrive back at our basis of argument that true consideration of intrinsic interests for children must become an increasing part of our educational planning. Furthermore, it may likewise be true that some examination into possible causal factors of these intrinsic interests will reveal findings that will contain significant implications for those who are concerned with the problems of organizing and planning the elementary school curriculum.

Summary

Therefore, to summarize the approach to this problem, it may be stated that this study is based upon an investigation into intrinsic educational interests as being a possible factor in the psychology of learning of fifth grade elementary school pupils. Attitudes and interests of these pupils, as they are expressed in terms of emotional reactions to their school subjects, comprise a key concept in contemporary education. With a record of school subject preferences on the one hand, it becomes a matter of seeking to determine causal

---

[11] Ibid., p. 54.

> are consequently more critical and less ready to study something to please the teacher, or because it is customary and others are studying it, or because the authorities say it will be beneficial. They should be more earnest and ambitious in their better realization of what it will do for their welfare. There should be less loss from relying on extrinsic interests in adults than in juvenile education.[11]

If this be true then we again arrive back at our basis of argument that true consideration of intrinsic interests for children must become an increasing part of our educational planning. Furthermore, it may likewise be true that some examination into possible causal factors of these intrinsic interests will reveal findings that will contain significant implications for those who are concerned with the problems of organizing and planning the elementary school curriculum.

Summary

Therefore, to summarize the approach to this problem, it may be stated that this study is based upon an investigation into intrinsic educational interests as being a possible factor in the psychology of learning of fifth grade elementary school pupils. Attitudes and interests of these pupils, as they are expressed in terms of emotional reactions to their school subjects, comprise a key concept in contemporary education. With a record of school subject preferences on the one hand, it becomes a matter of seeking to determine causal

---

[11] Ibid., p. 82.

factors which may affect these expressions of preference. As one area of possibility, an attempt is being made herewith to ascertain relationship between school subject preferences and school subject achievement.

Statement of the Problem

This study seeks to discover what, if any, significant relationship exists between recorded preferences for school subjects and objective achievement in those school subjects, in a sampling of fifth grade pupils.

The necessary data for conducting this study will be derived from a sample of the total population of 13,483 fifth grade pupils, representing 543 classrooms in 65 public school systems, who participated in the New England Subject Preference study. Through the medium of a direct check-list the subject preferences of these pupils were secured. An equated sample from 2231 pupils will be checked by Metropolitan Achievement Tests, Intermediate Battery, Partial, Form R. In this manner expressions of subject preferences and records of subject achievement will be available. These two sets of data will be compared statistically, through the critical ratio formula, to ascertain the direction and the amount of relationship existing between the two.

factors which may affect these expressions of preference. As one area of possibility, an attempt is being made herewith to ascertain relationship between school subject preferences and school subject achievement.

Statement of the Problem

This study seeks to discover what, if any, significant relationship exists between recorded preferences for school subjects and objective achievement in those school subjects, in a sampling of fifth grade pupils.

The necessary data for conducting this study will be derived from a sample of the total population of 13,452 fifth grade pupils, representing 543 classrooms in 93 public school systems, who participated in the New England Subject Preference study. Through the medium of a direct check-list the subject preferences of these pupils were secured. An equated sample from 2231 pupils will be checked by Metropolitan Achievement Tests, Intermediate Battery, Partial, Form K. In this manner expressions of subject preferences and records of subject achievement will be available. These two sets of data will be compared statistically, through the critical ratio formula, to ascertain the direction and the amount of relationship existing between the two.

CHAPTER TWO

REVIEW OF LITERATURE AND RESEARCH

An examination of the literature and research covering the field of subject preferences and their relation to achievement has revealed little on the elementary school level. However, despite this scarcity there have been a number of investigations of this nature conducted on the secondary school and college levels. While it must remain very apparent from the outset that these latter cannot be expected to shed much light upon the expressed nature of this particular study, it may likewise be true that certain fundamental principles and relationships have been established that could conceivably contain some related values. Therefore, in presenting a background, some of the leading studies on the higher levels have been reported, studies which also contain implications of pertinence for this particular investigation.

Contributions of Thorndike

Among the very first to explore the unknown areas of the relation of educational interests to achievement was

CHAPTER TWO

REVIEW OF LITERATURE AND RESEARCH

An examination of the literature and research covering the field of subject preferences and their relation to achievement has revealed little on the elementary school level. However, despite this scarcity there have been a number of investigations of this nature conducted on the secondary school and college levels. While it must remain very apparent from the outset that these latter cannot be expected to shed much light upon the expressed nature of this particular study, it may likewise be true that certain fundamental principles and relationships have been established that could conceivably contain some related values. Therefore, in presenting a background, some of the leading studies on the higher levels have been reported, studies which also contain implications of pertinence for this particular investigation.

Contributions of Thorndike

Among the very first to explore the unknown areas of the relation of educational interests to achievement was

Thorndike.[1-2] In these two studies, the first with 100 college students and the second with 344 college students, the students were queried as to their preferences in ranking seven general school subjects. They were asked to do this with three points of view in mind: (1) as these subjects had interested them when they were in elementary school; (2) as these subjects had interested them in high school; and (3) as these subjects interested them, contemporarily, in college. In addition, the students in both studies were asked to rank these subjects in accordance with their own estimated abilities in the subjects. Then Thorndike correlated the two factors, estimated interests with estimated abilities, and derived the following correlations:

	Median Correlation	
Educational Period	100 students	344 students
Elementary School	.89	.89
High School	.89	.89
College	.89	.89

A very obvious limitation to this study is evident in the fact that there was no direct check or objective criteria upon which to base any validity of the estimates. Both variables

---

[1]Edward L. Thorndike, "The Permanence of Interests and Their Relations to Abilities," in Meyer Brookfield (editor), Readings in Vocational Guidance (New York: Ginn and Company, 1915), pp. 386-95.

[2]Edward L. Thorndike, "Early Interests: Their Permanence and Relation to Abilities," School and Society, 5:178-79, February 10, 1917.

Thorndike.[1] In these two studies, the first with 100 college students and the second with 344 college students, the students were queried as to their preferences in ranking seven general school subjects. They were asked to do this with three points of view in mind: (1) as these subjects had interested them when they were in elementary school; (2) as these subjects had interested them in high school; and (3) as these subjects interested them, contemporarily, in college. In addition, the students in both studies were asked to rank these subjects in accordance with their own estimated abilities in the subjects. Then Thorndike correlated the two factors, estimated interests with estimated abilities, and derived the following correlations:

Median Correlation

Educational Period	100 students	344 students
Elementary School	.89	.88
High School	.89	.89
College	.89	.89

A very obvious limitation to this study is evident in the fact that there was no direct check or objective criteria upon which to base any validity of the estimates. Both variables

---

[1] Edward L. Thorndike, "The Permanence of Interests and Their Relations to Abilities," in Meyer Bronfield (editor), Readings in Vocational Guidance (New York: Ginn and Company, 1918), pp. 355-365.

[2] Edward L. Thorndike, "Early Interests: Their Permanence and Relation to Abilities," School and Society, 5:178-179, February 10, 1917.

in this experiment were matters of judgment, which lacked any substantiation of proof. So while it does remain true that the correlations are consistently high and reveal startling unanimity, the findings must also be weighed in the light of the inherent weakness of the experiment.

Concurrent with this work of Thorndike was a somewhat similar study by Bridges and Dollinger[3] in which 500 college students were asked to rank their college courses; first, in accordance with their interests in them, and, second, in accordance with their estimated abilities in them. This step was taken at the beginning of a semester. At the conclusion of the semester the grades of the students in the courses were used to derive correlations between interests and abilities, through Pearson's formula for mean square contingency. In the instance of rank in interests and college grades a correlation of .25 was found, for 256 cases. In the sample of rank in interests and estimated abilities a correlation of .57 was found, for 291 cases. One difficulty in this study lay in the fact that in the first correlation the relationship was between the rank of the individual as he stated his preferences, in relation to the other subjects, and the college grade, which was the rank of the individual in that subject as compared with all the other students. It would seem that

---

[3] J. W. Bridges and V. M. Dollinger, "The Correlation Between Interests and Abilities in College Courses," Psychological Review, 27:308-14, July, 1920.

this became a matter of seeking to correlate two factors which were not on a comparable basis.

Another similar study was conducted by King and Adelstein[4] with 140 University of Iowa students. They sought to correlate interests and abilities, and, in general, followed the same procedures of the foregoing studies. They did, however, make one change in technique that would appear to be somewhat significant. The other studies had called for the judgment of both educational interests and estimated abilities at the same time. In this study, however, these judgments were solicited on two separate occasions. Their findings were in terms of the following correlations:

Elementary school	.73
High school	.79
College	.73

Again, however, these represent correlations of two estimates--judgments--without the substantiation of objective checking.

Thorndike[5] evaluated the Bridges and Dollinger investigation by securing 140 correlations from random cases in their total sample. For the first part of their study, rank of interests with college grades, he reported a correlation of .46. For the second half, rank in interest and rank in estimated abilities, he reported a correlation of .70. In his

---

[4] Irving King and Morris Adelstein, "The Permanence of Interests and Their Relation to Abilities," School and Society, 6:359-360, September 10, 1917.

[5] Edward L. Thorndike, "The Correlation Between Interests and Abilities in College Courses," Psychological Review, 28: 374-76, September, 1921.

review of their study he suggested that the .46 correlation might be low due to chance errors in the grades and that the "real correlation between interest and ability will surely rise considerably above .70." This appraisal of the Bridges and Dollinger study, coupled with his own two investigations in which the consistently high correlations of .89 were derived, served to substantiate Thorndike's contention that educational interests are closely related to educational abilities and that real predictive qualities are possible.

Other Early Investigations

In another early study on this same topic Langlie[6] sought to compare the scholarship grades with the educational likes, dislikes, and interests of 172 members of the freshman class at Wesleyan University in 1927-28. He stated his conclusions from this study in this manner:

> 1. There is a tendency for individuals to obtain their best grades in those courses which they liked in secondary schools. Compared with the average of the total group, there were about 1½ to 2 times as many "best" grades obtained by the average of the selected group as by the unselected individuals in those courses which were liked.
>
> 2. The average individual who liked certain courses in secondary school obtained "worse" grades in a similar course about 2/3 as often as the average of the group as a whole.
>
> 3. A dislike for a subject is not predictive of lowest grades, but students who disliked certain

---

[6]T. A. Langlie, "Interests and Scholastic Proficiency," The Personnel Journal, 9:246-250, October, 1930.

courses obtained their best grades in similar courses about half as frequently as unselected students.

4. A declaration of an expectation of an interest in a particular course is not as valid for purposes of prognosis as is an indication of one's likes or dislikes obtained from experience, and yet there is value in such statements of interest. Students who expected to be interested in a particular course obtained their best grades in those courses about 170% as frequently as unselected individuals and obtained their lowest grades in such subjects about 70% as often as randomly selected individuals.

In other words, from this study it might be concluded that there are instances, not trends, but individual cases in which students interested in educational subjects will make high grades in those subjects.

Garretson[7] conducted a study of the relationships between expressed preferences and curricular abilities of ninth grade boys. The contribution made by this study is summarized in the following passage:

> In conclusion it may be said that the preference questionnaire offers an instrument of reasonably satisfactory validity (.868, .727, and .560) and reliability (.953, .925, and .861) for the use of guidance workers in the determination of curriculum inclination. It does not appear, however, that this instrument can be profitably employed in the prediction of the degree of success that will be achieved by the pupil within the field of activity for which he shows the greatest preference. The chief value of the multi-expression preference questionnaire to those who are charged with the responsibility of advising pupils entering the secondary school regarding

---

[7] O. K. Garretson, Relationships Between Expressed Preferences and Curricular Abilities of Ninth Grade Boys, Teachers College Contributions to Education, No. 396 (New York: Bureau of Publications, Teachers College, Columbia University, 1930), p. 73.

> their educational and vocational careers comes through the supplying of reasonably valid and reliable information regarding the inclinations of pupils. In other words, the results of the preference questionnaire should, in the hands of the advisors of pupils, do much to prevent the election by the pupil of a curriculum for which he is not fitted by inclination and thereby reduce the number of failures, the loss of time involved in the change of curriculum, and withdrawals from school occasioned by curricular maladjustment, in other words, to prevent the placement of "square pegs in round holes."

In an effort to ascertain the stability of interests in school studies a study was conducted by Davidson.[8] In this investigation 80 boys and girls of grades four, five, and six were asked to mark their subject preferences in order of interest to them at the time of recording. Then this same process was repeated a week later. Comparison of the two processes revealed a median correlation of .79, with a middle 50 per cent range of correlations of from .60 to .91. Excluding the lowest six cases, the median correlation was raised to .825. The author suggests there are three possible factors entering into the determination of these results:

> 1. Interests in the different studies were not in fact well differentiated, permitting a large influence to chance.
>
> 2. Their interests varied widely from week to week from child to child.
>
> 3. Or the ability of children to judge their interests was astonishingly uneven.

---

[8]Percy E. Davidson, "The Stability of Interests in School Studies," School and Society, 20:221-22, August 16, 1924.

their educational and vocational careers comes through the supplying of reasonably valid and reliable information regarding the inclinations of pupils. In other words, the results of the preference questionnaire should, in the hands of the advisors of pupils, do much to prevent the election by the pupil of a curriculum for which he is not fitted by inclination and thereby reduce the number of failures, the loss of time involved in the change of curriculum, and withdrawals from school occasioned by curricular maladjustment. In other words, to prevent the placement of "square pegs in round holes."

In an effort to ascertain the stability of interests in school studies a study was conducted by Davidson.[6] In this investigation 80 boys and girls of grades four, five, and six were asked to mark their subject preferences in order of interest to them at the time of recording. Then this same process was repeated a week later. Comparison of the two processes revealed a median correlation of .79, with a middle 50 per cent range of correlations of from .60 to .91. Excluding the lowest six cases, the median correlation was raised to .829. The author suggests there are three possible factors entering into the determination of these results:

1. Interests in the different studies were not in fact well differentiated, permitting a large influence to chance.

2. Their interests varied widely from week to week from child to child.

3. Or the ability of children to judge their interests was astonishingly uneven.

---

[6] Percy E. Davidson, "The Stability of Interests in School Studies," School and Society, 20:251-52, August 16, 1924.

He went on to suggest that the third reason should be eliminated from consideration because of the positive correlation and also because of the range of the middle 50 per cent.

After a year this process was repeated with the same pupils. This time the median correlation between their initial checking and this checking was .59, with a middle 50 per cent range of correlations of from .37 to .76.

Then again, after a three to four year period, but with only partial and scattered groups of the original sampling, the process was repeated. This time the median correlation was .32, with the middle 50 per cent of correlations ranging from .05 to .52.

Columba[9] also sought to compare the school achievement of pupils in grades five, six, seven, and eight, in the light of their individually expressed preferences, with the achievement of the remainder of the classes in each case. As his criterion of comparison he used the average achievement quotient of the individuals in each group, as it was derived from the Stanford Achievement Test. There were 356 pupils in the sampling and the subjects tested were: reading, spelling, geography, history, and language. From the four grades and the six subjects a total of 24 comparisons was available.

---

[9] M. Columba, "A Study of Interests and Their Relations to Other Factors of Achievement in the Elementary School Subjects," Catholic University of America, Educational Research Bulletin, I, No. 7, 1926.

---

[9] M. Columba, "A Study of Interests and Their Relations to Other Factors of Achievement in the Elementary School Subjects," Catholic University of America, Educational Research Bulletin, I, No. 7, 1922.

In the final results, of the 24 possibilities, there were seven groups in which the group preferring the subject were five points or higher in their achievement than the remainder of the class; and there were three groups in which the remainder of the class was five points or higher than the groups preferring the subject. In all other fourteen comparisons the difference between the two groups was less than five points of achievement quotient. A compilation of the groupings showed these results:

	Average Achievement Quotients	
Grade	Group Preferring Subject:	Remainder of Class
V	111.8	112.4
VI	104.4	100.8
VII	101.0	101.2
VIII	101.1	96.7
All Grades	104.2	102.8

From the evidence contained in the Columba study it might be concluded that there is just a slight tendency for those who prefer subjects to rate higher in achievement. But the value in significance of these findings is somewhat open to question, particularly with the smaller and separate group comparisons.

In what might be characterized as a purely psychological attempt to determine the relation of interests to ability Hartmann and Dashiell[10] conducted an experiment which was

---

[10]Ross Hartmann and J. F. Dashiell, "An Experiment to Determine the Relation of Interests to Ability," Psychological Bulletin, 16:259-62, August, 1919.

based upon six simple forms of psychological testing. This was conducted with a sampling of college students and the tests consisted of: word completion, code writing, immediate retention, arithmetical problems, pitching pennies, and letter cancellations. After completing these exercises the students were asked to indicate, each his own, the range of interest in the six items, rating them one to six for preference. Each student was likewise ranked for abilities in these experiments, based upon the group standards of achievement. The ranks of the abilities were correlated with the ranks of the preferences and the average of all the correlations was found to be .243. The highest positive correlation was +.915 and the highest individual negative correlation was -.371. On the basis of this study not a great deal of convincing evidence has been added to possible solutions of the basic problem.

The last of the early studies selected for citation here is one carried on by Dunlap,[11] which was an attempt to determine the place of preferences as indicators of achievement. The author prefaced his study by stating that:

> A knowledge of interests or preferences may be necessary, for these exert a strong influence upon an individual's success in a given task or in a group of closely related tasks.

In approaching the problem Dunlap felt that

---

[11] Jack W. Dunlap, "Preferences as Indicators of Achievement," The Journal of Educational Psychology, 26:411-15, September, 1935.

> . . . . a logical place to measure the effect of interest would seem to be where objective, valid, and reliable measures of achievement are available. Certainly these measures will be available in measuring academic achievement in the various tool subjects of the elementary school. Another reason for choosing this as a point of departure is that the results, if favorable, can be applied to a better social and academic adjustment of school children, certainly an important field of guidance.

In May of 1933 he conducted an experiment with 182 seventh grade and 148 eighth grade pupils. From two courses of study which he selected from courses in actual use, basic items were chosen as being representative of their respective subject fields. The classification into specific subject matter fields was done by a jury. These items were then built into a series of preference blanks which offered opportunities for the pupils to indicate personal preferences and reactions. The subject fields selected were: arithmetic, geography, grammar, history, literature, and general achievement. The evidence of achievement which was used for criteria of comparisons was taken from the Metropolitan Achievement Test, Form A, administered to these groups. He found that the average correlation between all the achievement scores and all the preferences was .47 for the seventh grade and .42 for the eighth grade. In general the correlations between preference and achievement in geography, grammar, history, and general achievement were "substantial." The lowest correlation was .40 for eighth grade geography and the highest correlation was .60 for seventh grade general achievement.

In summarizing his study Dunlap concluded:

> Correlations were all positive. It would seem that if the preliminary form of the preference blank described above were extended and refined, the expressed preferences of an individual child could be used to increase materially the accuracy of the prediction of future academic success on the junior high school level.[12]

Investigations of Fryer

Fryer was first attracted to the earlier efforts of Thorndike and decided to run a retrial of the latter's methods and study. This was done at the University of Utah with 71 students.[13] First, in refining the statistical treatment in correlating expressions of interests with estimated abilities, he found the following correlations of Thorndike's data:

	Interests and Estimated Abilities
Elementary school	.85 ± .02
High school	.86 ± .02
College	.89 ± .02

In addition he also correlated expressions of school preferences with school grades, as Bridges and Dollinger[14] had done, thereby eliminating the factor of missing objective check on the individual judgments. In doing this he found the following correlations:

---

[12] Ibid., p. 415.

[13] Douglas Fryer, "Interests and Ability in Educational Guidance," Journal of Educational Research, 26:27-39, June, 1927.

[14] Bridges and Dollinger, loc. cit.

Interests and School Grades

Elementary school	.63 ± .09
High school	.60 ± .08
College	.80 ± .07

This study tended, in general, to confirm the findings of Thorndike and yet Fryer stated that he did not run the re-trial merely to add more data to conclusions already derived. Rather did he seek to study a method which appeared to him to be open to question. He noted that his correlations between interests and school grades, .63 for the elementary school and .60 for the high school, were higher than the similar correlation, .46, determined by Thorndike[15] in reworking the Bridges and Dollinger data. Then he noted that Bridges and Dollinger had not required their students to classify their interests and abilities into established subject groupings. Realizing that Thorndike in his studies had required the students to be limited to seven educational subject categories, Fryer raised the question that the method of limiting such selections could be an influence that would predetermine higher correlations. Not only would requiring students to allot their educational interests into seven established classifications cause higher correlations, but the similar matter of limiting and defining the school subjects could also have a similar effect. In addition to these points, Fryer also

---

[15]Edward L. Thorndike, "The Correlation Between Interests and Abilities in College Courses," Psychological Review, 28: 374-76, September, 1921.

Interests and School Grades

Elementary school	.65 ± .02
High school	.80 ± .00
College	.80 ± .07

This study tended, in general, to confirm the findings of Thorndike and yet Pryer stated that he did not run the correlations merely to add more data to conclusions already derived. Rather did he seek to study a method which appeared to him to be open to question. He noted that his correlations between interests and school grades, .65 for the elementary school and .80 for the high school, were higher than the similar correlation, .45, determined by Thorndike[15] in reworking the Bridges and Dollinger data. Then he noted that Bridges and Dollinger had not required their students to classify their interests and abilities into established subject groupings. Realizing that Thorndike in his studies had required the students to be limited to seven educational subject categories, Pryer raised the question that the method of limiting such selections could be an influence that would predetermine higher correlations. Not only would requiring students to allot their educational interests into seven established classifications cause higher correlations, but the similar matter of limiting and defining the school subjects could also have a similar effect. In addition to these points, Pryer also

---

[15] Edward L. Thorndike, "The Correlation Between Interests and Abilities in College Courses," Psychological Review, 321-376, September, 1921.

questioned the wisdom of requiring students to express judgments of both interests and abilities at the same time; since, he suggested, one judgment could very well affect the other simultaneously. This was a procedural factor that had been changed in the conduct of the King and Adelstein investigation.[16]

Fryer continued to study and probe into the matter of Thorndike's methods and conclusions. In 1923-24 he ran two more studies, one at the University of Utah and the other at New York University.[17] In the former he used 104 college students and in the latter, 89 college students. Again he was aiming primarily at the determination of the relationship between expressions of educational interests and the estimates of the educational abilities. These studies revealed the following correlations:

	Interests and Estimated Abilities	
	Utah	N Y U
Elementary school	.57 ± .04	.60 ± .05
High school	.70 ± .03	.66 ± .04
College	.60 ± .07	.61 ± .05

The investigator had this to say about his results:

> The relationship as estimated by the individual himself is evidently represented by an average correlation not higher than .70, which is the median correlation found in the evaluation by Thorndike of

---

[16]King and Adelstein, loc. cit.

[17]Fryer, loc. cit.

> the Bridges and Dollinger study. The relationship between expression of educational interests and abilities as indicated by school grades is much lower. The average correlation found by Thorndike's reworking the data of Bridges and Dollinger was .46. It would appear from all available data that the relationship between educational interests and educational abilities, measured by school grades, is represented by an average correlation between .20 and .40. We might, then, take .30 as representing the average relationship between educational interests and educational abilities according to school grades. Whatever mathematical representation is taken for this relationship, it will not be high.[18]

Thorndike tended to suggest that the relationship between estimated abilities and interests is nearer the truth than the relationship between ability, as indicated by school grades and interests. Fryer stated that he felt the opposite would be true, at least for high school and college levels. He said:

> School grades are the more generally accepted criteria. They are objective and objective criteria tend to be more accurate as a rule. Considering the possibility of both being partially correct, the correlation would seem to reside somewhere between the two, about .45.[19]

Fryer also made some additional significant comments.

> The correlations indicating the relationship between interest and ability in educational subjects suggests a lack of understanding on the part of the individual of the best fields of ability expression. These relationships indicate that an individual's statement of his interests in an educational subject is not predictive of corresponding ability in that subject. Contrary to an earlier accepted theory,

---

[18] Ibid.

[19] Ibid.

---

[18] Ibid.

[19] Ibid.

> expressions of interests as a criterion for educational expression have been found in this investigation to be of little value.[20]

He went on further to state:

> Everyday observation in guidance activities lends support to this conclusion, the conclusion, namely, that educational interests are not highly predictive of educational abilities; also that vocational interests are not as highly predictive of vocational abilities. For what holds true in one field of expression, should be true in the other. Of course interest is suggestive of ability. Interests and ability are related in both educational and vocational expressions. They have a positive correlation. That is not the point under discussion, however. The question is, are they closely enough related to enable us to predict accurately, one from the other? The evidence clearly indicates that they are not.[21]

In another reference Fryer stated:

> Of the problems investigated in the study of educational interests, those upon which the most attention has centered seem to be the least significant in the adjustment of the individual. These are the problems related to the prediction of future interests and of educational abilities or achievement. The prediction of educational abilities from estimated interests or from inventoried interests is not high, although it may add slightly to measures of intelligence in prediction of achievement or scholarship. Educational interests have only a slight relation to abilities, or achievement, in the educational field. This is a similar conclusion to that in the vocational field.[22]

Fryer disputed the earlier investigations of Thorndike and others; and concluded, for his own part, that there is a

---

[20] Ibid.

[21] Ibid.

[22] Douglas Fryer, The Measurement of Interests (New York: Henry Holt and Company, 1931), p. 257.

expressions of interests as a criterion for educational expression have been found in this investigation to be of little value.[20]

He went on further to state:

> Everyday observation in guidance activities lends support to this conclusion, the conclusion, namely, that educational interests are not highly predictive of educational abilities; also that vocational interests are not as highly predictive of vocational abilities. For what holds true in one field of expression, should be true in the other. Of course interest is suggestive of ability. Interests and ability are related in both educational and vocational expressions. They have a positive correlation. That is not the point under discussion, however. The question is, are they closely enough related to enable us to predict accurately, one from the other? The evidence clearly indicates that they are not.[21]

In another reference Fryer stated:

> Of the problems investigated in the study of educational interests, those upon which the most attention has centered seem to be the least significant in the adjustment of the individual. These are the problems related to the prediction of future interests and of educational abilities or achievement. The prediction of educational abilities from estimated interests or from invenboried interests is not high, although it may add slightly to measures of intelligence in prediction of achievement or scholarship. Educational interests have only a slight relation to abilities, or achievement, in the educational field. This is a similar conclusion to that in the vocational field.[22]

Fryer disputed the earlier investigations of Thorndike and others; and concluded, for his own part, that there is a

---

[20] Ibid.

[21] Ibid.

[22] Douglas Fryer, The Measurement of Interests (New York: Henry Holt and Company, 1931), p. 387.

definitely low correlation between expressions of educational interests and the resultant school grades, this correlation being, to his consideration, about .30. He has further concluded that this level is too low to be of any predictive value for either individual or school purposes. However, for the sake of the record, it should be pointed out, that all these investigations were conducted with students on the college level, a factor and a condition that do not necessarily lead to similar conclusions for pupils on the elementary school levels.

Subject Preferences of Elementary School Children

In a straight tabulation of pupil preferences for school subjects Holmes[23] found that arithmetic was the favorite subject of the pupils. This investigation was conducted in 1932 in the Wyman School of Denver and included all the boys and girls of grades two through six, a total of 808 pupils. After arithmetic came art, ranking as second choice, and reading was the third choice. In this particular study the pupils were also asked to submit their selections of the subjects "liked least." These latter were revealed to be: social science, music, and spelling, in that order. For the purposes of showing a composite picture of all of the results and also to

---

[23]Ethel E. Holmes, "School Subjects Preferred by Children," Appraising the Elementary School Program, Sixteenth Yearbook, Department of Elementary School Principals (Washington, D.C.: National Education Association, 1937), pp. 336-44.

definitely low correlation between expressions of educational interests and the resultant school grades. This correlation being, to his consideration, about .80. He has further concluded that this level is too low to be of any predictive value for either individual or school purposes. However, for the sake of the record, it should be pointed out, that all these investigations were conducted with students on the college level, a factor and a condition that do not necessarily lead to similar conclusions for pupils on the elementary school levels.

Subject Preferences of Elementary School Children

In a straight tabulation of pupil preferences for school subjects Holmes[25] found that arithmetic was the favorite subject of the pupils. This investigation was conducted in 1932 in the Wyman School of Denver and included all the boys and girls of grades two through six, a total of 808 pupils. After arithmetic came art, ranking as second choice, and reading was the third choice. In this particular study the pupils were also asked to submit their selections of the subjects "liked least." These latter were revealed to be: social science, music, and spelling, in that order. For the purposes of showing a complete picture of all of the results and also to

---

[25] Ethel E. Holmes, "School Subjects Preferred by Children," Appraising the Elementary School Program, Sixteenth Yearbook, Department of Elementary School Principals (Washington, D.C.: National Education Association, 1937), pp. 336-43.

show the combinations of favorable with unfavorable "votes," all choices were totalled and show the following results:

	Liked Best	Liked Least	Net Difference
Arithmetic	307	92	215
Art	127	65	62
Social Science	59	140	-81
Language	8	55	-47
Reading	117	59	58
Spelling	62	94	-32
Penmanship	15	82	-67
Elementary Science	3	23	-20
Music	44	133	-89
Physical Education	66	27	39

From this compilation it is readily apparent that arithmetic, art, and reading were the only subjects to finish on the positive side of the ledger, all other subjects receiving more negative than positive votes.

In this study an attempt was also made to determine the stability of the likes and dislikes of children. This was done by assigning values to the choices in the degrees of consistency; that is, as they appeared in each checking time over a period of years. Through this device it was revealed that arithmetic remained the most stable among the best-liked subjects, with art and reading following in that order. The most unstable subjects were language, penmanship, and elementary science, none of which was selected for the best-liked category by any pupil more than once during the period of the study.

From this account Holmes concluded:

show the combinations of favorable with unfavorable "votes,"
all choices were totalled and show the following results:

	Liked Best	Liked Least	Net Difference
Arithmetic	307	92	215
Art	127	69	58
Social Science	59	140	-81
Language	8	55	-47
Reading	117	59	58
Spelling	68	94	-26
Penmanship	18	82	-67
Elementary Science	3	23	-20
Music	44	133	-89
Physical Education	68	87	39

From this compilation it is readily apparent that arithmetic, art, and reading were the only subjects to finish on the positive side of the ledger, all other subjects receiving more negative than positive votes.

In this study an attempt was also made to determine the stability of the likes and dislikes of children. This was done by assigning values to the choices in the degrees of consistency; that is, as they appeared in each checking time over a period of years. Through this device it was revealed that arithmetic remained the most stable among the best-liked subjects, with art and reading following in that order. The most unstable subjects were language, penmanship, and elementary science, none of which was selected for the best-liked category by any pupil more than once during the period of the study.

From this account Holmes concluded:

> It is not expected, of course, that all pupils will learn to like all subjects equally well. Nevertheless there is value in concentrating the school's efforts, for a time, on the subjects they like least, especially if these are generally recognized as among the most important by educational leaders. Children are not likely to profit greatly from school activities in which they are not interested or which they actively dislike.[24]

The sentiment expressed in the last sentence is certainly worthy of consideration from the point of view of the psychology of learning. But the other thought expressed by Holmes, that it might be well to concentrate attention on less liked subjects, coupled with her implications of "importance" being attached to certain subjects, would most definitely be open to serious question.

Another very interesting and revealing study of the preferences of children for school subjects was conducted by Baisden and Burkhard.[25] This was carried on in the public schools of Sacramento, California in 1939 and reached about 6000 elementary school pupils and about 4000 junior high school pupils. The instigators of this study approached the problem from the point of view of realizing that certain standard methods of evaluating the curricular materials, such as the use of objective tests and the subjective judgments

---

[24] Ibid.

[25] Leo B. Baisden and William J. Burkhard, "Children's Preferences in School Subjects and the Curriculum," Children's Interests, Twelfth Yearbook, The California Elementary School Principals' Association, Sacramento, 1940, pp. 41-47.

It is not expected, of course, that all pupils will learn to like all subjects equally well. Nevertheless there is value in concentrating the school's efforts, for a time, on the subjects they like least, especially if these are generally recognized as among the most important by educational leaders. Children are not likely to profit greatly from school activities in which they are not interested or which they actively dislike.[24]

The sentiment expressed in the last sentence is certainly worthy of consideration from the point of view of the psychology of learning. But the other thought expressed by Holmes, that it might be well to concentrate attention on less liked subjects, coupled with her implications of "importance" being attached to certain subjects, would most definitely be open to serious question.

Another very interesting and revealing study of the preferences of children for school subjects was conducted by Baladen and Burkhard.[25] This was carried on in the public schools of Sacramento, California in 1939 and reached about 6000 elementary school pupils and about 4000 junior high school pupils. The investigators of this study approached the problem from the point of view of realizing that certain standard methods of evaluating the curriculum materials, such as the use of objective tests and the subjective judgments

---

[24] Ibid.

[25] Leo B. Baladen and William J. Burkhard, "Children's Preferences in School Subjects and the Curriculum," Children's Interests, Twelfth Yearbook, The California Elementary School Principals' Association, Sacramento, 1940, pp. 41-47.

of teachers, have failed to tell the whole story. They felt that the pupil, who is reacting to the curriculum, and who is in an ideal position to indicate its appeal or lack of it, should also be brought into the picture of curricular evaluation. They make it perfectly evident that they did not feel that any results would necessarily have any bearing upon the intrinsic value of curricular contents, but they did feel that some barometer of pupil interest, of pupil attitude, and of pupil evaluation, could contain vital educational implications.

Again the solicitation of reactions was done through a direct check list upon which the pupils were asked to indicate the favorite subject, together with the reason for it being the favorite; and also the least-liked subject, again with the reason for that choice. Complete results were not obtainable from grades one and two, although partial reports were secured, but complete reports were obtained from all other grades. The best-liked subjects were these:

Grade One	Reading
Grade Two	Reading
Grade Three	Art
Grade Four	Art
Grade Five	Art
Grade Six	Arithmetic

The least-liked subjects were these:

Grade One	Penmanship
Grade Two	Arithmetic
Grade Three	Music
Grade Four	Music
Grade Five	Penmanship
Grade Six	Penmanship

An analysis of the reasons for disliking various subjects revealed the following trends (the classifications were developed by the authors upon a basis of analyzing and sorting and generalizing upon the wide range of answers):

Faulty or uninteresting course or materials	36%
Lack of ability or aptitude	36%
Method of teaching	15%
No value	6%
The teacher	5%

Certain other points stood out in this study. For one thing, a comparison between the best-liked and the least-liked subjects showed there were many subjects which are high on both lists. For example, arithmetic received a heavy vote both for it and against it all the way through the grades. Another significant trend lay in the fact that both science and social studies made consistently disappointing showings all the way through. Since this was a dichotomy of choice--one subject liked and one subject disliked--by each pupil, a wide area of "in-between" resulted and the authors confessed they were at a loss to attribute significance to that fact. They felt that possibly there were subjects which did not excite particular interests or appeal to specialized abilities.

They did, however, raise the point of considering the importance of the results:

> If a large percentage of children actively dislike a given subject, it is certain that they approach the learning of this subject under a most serious learning handicap, if we regard interest as essential to learning. In such a case we must

> recognize that there is something basically wrong with the subject matter, with its grade placement, or with the way in which it is taught. Children may dislike what is demonstrably a very valuable subject because it is poorly taught. On the other hand, they may dislike a subject because it is inherently difficult for them and they constantly find in it the experience of failure. From a curricular standpoint a number of facts are quite clear in this study. There is a clear understanding that children do not necessarily dislike academic subjects or like "activity type" subjects. It is evident, too, that children's interests and appreciations change from grade to grade. In the subject of reading, there is clear evidence that children begin to dislike the subject of reading after they have learned the mechanics of reading, although they enjoy the activity of reading, as indicated by the high standing of library in subjects liked in the upper elementary grades.[26]

Several other points stood out significantly from this study. The authors suggested that: "One might infer from the results of this study that children are inclined to like subjects which are quite specific and objective in their immediate outcomes, such as arithmetic, art, and reading. In these subjects they can see quite immediately the products of their efforts."[27] Another implication may be contained in the fact that the children were less definite about their reasons for liking individual subjects, even in the instance of choosing a favorite. But, on the other hand, they were rather definite about their reasons for disliking subjects. These reasons have already been stated and would seem to contain areas for

---

[26] Ibid., p. 46.

[27] Ibid., p. 47.

---

[27] Ibid., p. 47.

[28] Ibid., p. 46.

consideration in curriculum building. And finally, the thought was offered: "If a large percent of children dislike a given subject, it implies a clear obligation to study the curriculum for the purpose of changing the content, the method of teaching, or the materials used."[28] The direction contained in this last passage cannot be open to too much questioning; but the relative stresses to be placed upon their suggested courses of action to be taken will most certainly call for a maximum of thought and care in taking steps.

In this same Twelfth Yearbook, on Children's Interests, of the California Elementary School Principals' Association, Melbo conducted a review of the literature on children's interests.[29] In this review he analyzed 362 separate writings which were listed in the Education Index and Psychological Abstracts on "Children's Interests" and on "Interests," for the decade 1930-1940. In keeping with this very pronounced trend of investigation he suggested that the"1930's may well be marked in some future history of education as the period in which 'children's interests were discovered.'"[30] The reason for all this activity in this particular field was

---

[28] Loc. cit.

[29] Irving R. Melbo, "A Review of the Literature on Children's Interests," Children's Interests, Twelfth Yearbook, The California Elementary School Principals' Association, Sacramento, 1940, pp. 6-22.

[30] Loc. cit.

consideration in curriculum building. And finally, the thought was offered: "If a large percent of children dislike a given subject, it implies a clear obligation to study the curriculum for the purpose of changing the content, the method of teaching, or the materials used."[28] The direction contained in this last passage cannot be open to too much questioning; but the relative stresses to be placed upon their suggested courses of action to be taken will most certainly call for a maximum of thought and care in taking steps.

In this same Twelfth Yearbook, on Children's Interests, of the California Elementary School Principals' Association, Melbo conducted a review of the literature on children's interests.[29] In this review he analyzed 383 separate writings which were listed in the Education Index and Psychological Abstracts on "Children's Interests" and on "Interests," for the decade 1930-1940. In keeping with this very pronounced trend of investigation he suggested that the"1930's may well be marked in some future history of education as the period in which 'children's interests were discovered.'"[30] The reason for all this activity in this particular field was

---

[28] Loc. cit.

[29] Irving R. Melbo, "A Review of the Literature on Children's Interests," Children's Interests, Twelfth Yearbook, The California Elementary School Principals' Association, Sacramento, 1940, pp. 8-22.

[30] Loc. cit.

well put by Ross,[31] when he said:

> The schoolmaster of that (former) day felt no obligation to make learning interesting and complacently forced a child by fear of the ferule to "get" his lessons. Such repression worked no great harm when those who abominated school could generally escape from it. Now, however, when society insists upon keeping every child in school for eight or ten years, it behooves educators to make education palatable by tieing it to the child's native interests.

Melbo indicated that this coverage of the literature for this period reveals that is exactly what a large number of educators have been trying to do: make education interesting by making recognition of the place of the interests of children.

A pertinent observation was made by Melbo[32] when he said:

> The very obvious fact recurring again and again in the literature pertaining to interest is the blithe assumption that children have "native" interests in specific patterns. Perhaps the error is not one of commission but rather one of omission of any serious study by the educational groups of the psychological and sociological bases and functioning of interests. It must always be remembered that interests are derived only from the culture patterns of the group or groups with which the child is in contact. They are acquired, not inherited, although their tap roots may be found in the basic drives or desires which seem to characterize all human life, irrespective of culture.

This review of the literature in the field was summarized as follows by Melbo:

> On the whole, the numerous studies which attempted to locate pupil interests in terms of subject preferences seem to be singularly unproductive

---

[31]Edward A. Ross, The Outlines of Sociology (New York: The Century Company, 1933), p. 58.

[32]Melbo, op. cit., p. 22.

well put by Rose,[31] when he said:

> The schoolmaster of that (former) day felt no obligation to make learning interesting and consciously forced a child by fear of the ferule to "get" his lessons. Such repression worked no great harm when those who abominated school could generally escape from it. Now, however, when society insists upon keeping every child in school for eight or ten years, it behooves educators to make education palatable by tieing it to the child's native interests.

Melbo indicated that this coverage of the literature for this period reveals that is exactly what a large number of educators have been trying to do: make education interesting by making recognition of the place of the interests of children.

A pertinent observation was made by Melbo[32] when he said:

> The very obvious fact recurring again and again in the literature pertaining to interest is the blithe assumption that children have "native" interests in specific patterns. Perhaps the error is not one of commission but rather one of omission of any serious study by the educational groups of the psychological and sociological bases and functioning of interests. It must always be remembered that interests are derived only from the cultural patterns of the group or groups with which the child is in contact. They are acquired, not inherited, although their tap roots may be found in the basic drives or desires which seem to characterize all human life, irrespective of culture.

This review of the literature in the field was summarized as follows by Melbo:

> On the whole, the numerous studies which attempted to locate pupil interests in terms of subject preferences seem to be singularly unproductive

---

[31] Edward A. Rose, The Outlines of Sociology (New York: The Century Company, 1923), p. 58.

[32] Melbo, op. cit., p. 22.

> of findings to which any significance can be attached. There was but little agreement in the likes and dislikes listed, and the reasons for such. Preferences were often expressed ambiguously in terms of interest or lack of interest of the subject matter. The investigations which sought to identify interest in more specialized areas were scarcely more successful.[33]

Current Investigations

Richardson[34] undertook to establish the relationship between knowledge of current events and preference for social studies on a fifth grade level. A current events test was constructed and administered. The individual results were paired with the statements of pupils' preference, as gathered from a check list. The sampling totalled 540 cases. By way of submitting findings the author stated that fifth grade boys and girls who preferred social studies had a significantly greater knowledge of current affairs than did those who did not prefer social studies. He further submitted that there were no significant differences between boys and girls in the results but that more boys than girls did prefer social studies. He stated that very few children actually disliked social studies, but that less than one-third of them rated social studies as a favorite subject. In addition Richardson

---

[33] Ibid., p. 9.

[34] Clarence O. Richardson, "The Relationship Between Knowledge of Current News and Preference for Social Studies on a Fifth Grade Level," Unpublished Master's thesis (Boston: Boston University, 1948).

of findings to which any significance can be attached. There was but little agreement in the likes and dislikes listed, and the reasons for such. Preferences were often expressed ambiguously in terms of interest or lack of interest of the subject matter. The investigations which sought to identify interest in more specialized areas were scarcely more successful.[33]

Current Investigations

Richardson[34] undertook to establish the relationship between knowledge of current events and preference for social studies on a fifth grade level. A current events test was constructed and administered. The individual results were paired with the statements of pupils' preference, as gathered from a check list. The sampling totalled 540 cases. By way of submitting findings the author stated that fifth grade boys and girls who preferred social studies had a significantly greater knowledge of current affairs than did those who did not prefer social studies. He further submitted that there were no significant differences between boys and girls in the results but that more boys than girls did prefer social studies. He stated that very few children actually disliked social studies, but that less than one-third of them rated social studies as a favorite subject. In addition Richardson

---

[33]Ibid., p. 9.

[34]Clarence O. Richardson, "The Relationship between Knowledge of Current News and Preference for Social Studies on a Fifth Grade Level," Unpublished Master's thesis (Boston: Boston University, 1948).

offered the observation that children as a group were not very well informed on the news events covered by the constructed test. While it remains perfectly obvious that this investigation will not have a great deal of bearing on the expressed purpose of this study, it does, none-the-less, reveal some possible leads to the relationship under consideration.

In 1947 a cooperative study into the nature of children's preferences for school subjects was undertaken by a group of graduate students at the Boston University School of Education. This investigation was facilitated through the cooperation of the New England School Development Council, an affiliated group of public school systems, having for its primary purpose the study of educational problems common to all the communities, and the advancement of educational progress in New England. This study reached into the public school systems of 65 New England cities and towns and secured responses from 13,483 fifth grade pupils.

An individual pupil check-list was developed which was distributed to these fifth grade pupils through the cooperation of the participating school systems. On this form the children were instructed to indicate: (1) first, second, and third choices of favorite subjects, as they were listed in one column; (2) in the next column they were asked to indicate their reaction to each subject in terms of "like," "neither like

nor dislike," or "dislike"; and (3) in the third column they were also asked to indicate their personal reaction to each subject in terms of "easy" or "hard." The prepared list of school subjects comprised the twelve standard elementary school subjects most frequently included in the curricula of the schools of this region. These were: reading, arithmetic, language, penmanship, spelling, geography, history, social studies, art, music, science, and health education. It was so arranged that the check lists were readily adaptable to the variances in nomenclature of titling the courses in the different communities. One final instruction was sent to the teacher in each case. In returning the check lists each fifth grade classroom teacher was also requested to indicate her own personal preference of the subject she enjoyed teaching most.

From all the basic data thus gathered a series of investigations into various aspects and phases of subject preferences were conducted. These studies looked into causal factors, into concomitant relationships, and into statistical conclusions.

The basic study in this group was conducted by Blanchard.[35] In this all the complete results were tabulated and analyzed, with a full compilation of all the preferences and

---

[35]Helen C. Blanchard, "Subject Preferences in the Fifth Grade," Unpublished Master's thesis (Boston: Boston University, 1948).

nor dislike," or "dislike"; and (3) in the third column they were also asked to indicate their personal reaction to each subject in terms of "easy" or "hard." The prepared list of school subjects comprised the twelve standard elementary school subjects most frequently included in the curricula of the schools of this region. These were: reading, arithmetic, language, penmanship, spelling, geography, history, social studies, art, music, science, and health education. It was so arranged that the check lists were readily adaptable to the variances in nomenclature of titling the courses in the different communities. One final instruction was sent to the teacher in each case. In returning the check lists each fifth grade classroom teacher was also requested to indicate her own personal preference of the subject she enjoyed teaching most.

From all the basic data thus gathered a series of investigations into various aspects and phases of subject preferences were conducted. These studies looked into causal factors, into concomitant relationships, and into statistical conclusions.

The basic study in this group was conducted by Glennard.[55] In this all the complete results were tabulated and analyzed, with a full compilation of all the preferences and

---

[55] Helen U. Glennard, "Subject Preferences in the Fifth Grade," Unpublished Master's thesis (Boston: Boston University, 1948).

their relative standings. Space does not permit more than a brief summary of her findings. Primarily this inquiry revealed that, of this sampling, reading was the first choice preference, being selected by 17.74 per cent; and arithmetic was a close contender, being selected by 16.84 per cent--this finding being on the basis of combining first, second, and third choices. Art, spelling, and music hold the next ranks. The social studies were ranked down on the list; science was also down on the list; and language was a consistent last choice throughout the study.

In comparing the results of the Blanchard study[36] with the results of the Holmes study,[37] cited earlier, it can be seen there was close agreement with the first three choices being reading, arithmetic, and art in the former, and the first three choices being arithmetic, reading, and art in the latter. In both studies the social studies occupied approximately similar positions in the range; and language and penmanship were also close to the bottom in both studies. There were only minor variances in the relative standings of music, spelling, and science. So, all in all, it would seem that these two studies tended to bear each other out.

To compare the results of the Blanchard study[38] with

---

[36] Ibid.

[37] Holmes, loc. cit.

[38] Blanchard, loc. cit.

Boston University
School of Education
Library

---

[36] Ibid.

[37] Holmes, loc. cit.

[38] Blanchard, loc. cit.

results of the similar Baisden and Burkhard study,[39] cited previously also, some minor differences are readily apparent. In the latter study art and arithmetic finished in the top two positions, so there is some agreement there. But also in this latter study reading made an extremely poor showing in ninth place. However, a subject called "library" in this study did finish in third position. Spelling was much lower placed in the Baisden and Burkhard study. In both studies the social studies took approximately the same ranks; and language and penmanship were consistently near the bottom in both studies.

Generally speaking, therefore, it can safely be concluded that these three studies have tended to corroborate one another. On the basis of three investigations, widely divergent as to time and to geographical location, it can be stated that, for fifth grade pupils, arithmetic, reading, and art are the favorite subjects; language and penmanship are the least-liked subjects; and spelling, social studies, and music tend to occupy similar positions in the middle of the range.

Among the fifteen investigations in the Boston University study were two which sought to determine the influence of achievement upon preference. In one of them, Cusack[40]

---

[39]Baisden and Burkhard, loc. cit.

[40]Mary E. Cusack, "An Analysis of the Influence of Achievement on Preference for Reading and Arithmetic," Unpublished Master's thesis (Boston: Boston University, 1948).

conducted a study of a small sample of 225 pupils in one town. In this study she matched the indicated preferences of these pupils against the grade scores in reading and in arithmetic. These scores were taken from the Iowa Every-Pupil Tests of Basic Skills--Form O. Means and standard deviations were computed for each subtest in reading and arithmetic; and the critical ratio of the difference of the means between the "preferred" and the "non-preferred" groups was used as the index of statistical significance. The comparative groups were established on the basis of one group representing the combined first, second, and third choices of preference for reading--and also for arithmetic; while the other group for comparison was the total fifth grade population under inquiry. It was found, on the basis of this study, that there was a significant difference between the reading achievement of the total group and those who made reading their preference, in favor of the group who expressed the preference. In arithmetic no significant differences were found between those who preferred arithmetic and the total sample population. In fact, considering each of the three choices as separate preference groups, and with the exception of those who made arithmetic their second choice, such differences in achievement as there were, were in favor of the total population, even though these differences were not statistically significant.

The other study of this nature in this group was one

by Gardner,[41] in which he sought to investigate the differences in subject preferences between high achievement readers and low achievement readers. In this study 1102 cases were taken from the original sampling and this number comprised the total fifth grade population in two of the communities. In one city the reading achievement scores were taken from the Stanford Achievement Test, Intermediate Battery, Form E; while in the other the reading achievement scores were taken from the Metropolitan Achievement Test, Form C. Means and standard deviations of reading achievement were computed for each city. The classification of readers into "high achievement" and "low achievement" was arbitrarily made on the basis of the former being more than one standard deviation above the mean with the latter being more than one standard deviation below the mean. The individual selections of first, or second, or third choices for reading were combined to get gross totals. The critical ratio technique was again applied to determine levels of statistical significance. From all the total possibilities of comparison, considering the range of twelve subjects upon which these groups were compared, only the following significant findings were revealed:

1. The high achievement readers, first choice preference,

---

[41] George H. Gardner, Jr., "Differences in Subject Preferences of High Achievement Readers and Low Achievement Readers," Unpublished Master's thesis (Boston: Boston University, 1948).

were favored over the low achievement readers.

2. The low achievement group in arithmetic, first choice of arithmetic preference, were favored over the high achievement group.

3. The high achievement readers, combined choices of reading preferences, were favored over the low achievement group.

4. The high achievement girl readers, first choice of reading preference, were favored over the low achievement girls.

5. The low achievement girls in arithmetic, first choice of arithmetic preference, were favored over the high achievement girls in arithmetic.

Among the most recent contributions to this field has been the work of Jersild and Tasch[42] in which they have described a far-reaching investigation into the interests of children. This study was the result of a conviction:

> It began to appear that we need a view of children's interests that is more realistic than some views which have prevailed in education, that we might also adopt a far more generous conception of the role interests can play and the meaning they might have in the lives of children than has commonly prevailed in our philosophies of education and in our ideas concerning the home training of children.[43]

Since this study undertook to discover and analyze the

---

[42] Arthur T. Jersild and Ruth J. Tasch, Children's Interests (New York: Bureau of Publications, Teachers College, Columbia University, 1949).

[43] Ibid., p. 3.

interests of children in the widest possible range, which included subjective wishes, happiest experiences, gifts, out-of-school activities, etc., it was a much broader approach to the problem of interests than one which seeks merely to discover the school subject interests of children. However, this latter category naturally was one of many which appeared. One major finding stood out in connection with the subject preferences of children, as revealed by this study, and that was the unpopularity of social studies as compared with most other subjects. In general, this study showed that the two academic subject matter categories which scored highest in popularity were: (1) the reading, writing, and communicative arts; and (2) the arithmetic phases. In addition, the arts were mentioned quite frequently as liked best by children in all grades.

An interesting observation was made by the authors on this matter of children's interests:

> Subject to these limiting factors, there is a wide margin of chance and choice in the particular interests which children at a given level acquire, once they are old enough to go to school. To the extent that this is true, their interests demonstrate what they have learned rather than what they could learn to like to learn. They reflect the past more than they provide a guide to the future and so must be carefully interpreted in order to determine their true significance for education.[44]

This report by Jersild and Tasch would appear to be an extremely valuable contribution to the store of knowledge on

---

[44] Ibid., p. 73.

children's interests. As such it contains a great many implications and suggestions which might well be thoroughly considered by those who feel that: "This view of the role of interests underscores the importance of making provisions in the educational program for a variety of interests in order to take account of the fact that children differ so markedly in their make-up."[45]

Review of Literature in the Field of Interests

As Melbo has already pointed out,[46] there has been an abundance of investigation into this matter of interests and their possible bases for educational consideration. In searching the literature a great many pertinent comments and passages have been discovered. This section will deal with a presentation of some of these contributions and point of view.

On the one hand Meredith[47] has offered this:

> The present day organismic theory places the emphasis upon the intrinsic satisfaction of the learner. When the curriculum is thus organized the children are led to an awareness of their needs and thus can attack problems with which they are vitally concerned, and which will lead them through a series of activities involving continuous reconstruction of experience on higher levels. The teacher must realize the value of pupil interest

---

[45] Ibid., p. 86.

[46] Melbo, loc. cit.

[47] George H. Meredith, "Utilizing Pupil Interests in Curriculum Making," California Journal of Elementary Education, 5:32, August, 1936.

> when choosing large areas with which the teacher and pupils may develop a unit of experience. This does not mean that content and method should be based upon the passing fancies of children, but instead upon the abiding worthy interests which will lead children into activities rich with possibilities for growth toward goals of education.

Eginton has voiced a caution that must be constantly kept in mind at all times in considering the matter of dealing with the interests of pupils as a basis for curriculum planning. He said: "There is a grave danger that the importance of discovering and developing interests as highly worthwhile ends in themselves will be overlooked."[48]

Another common problem in this area, how to ascertain, in an accurate and reliable manner, these essential interests, has been expressed by Fitzpatrick: "General educators have recommended pupil interest as a criterion of what should be included in the courses of study, but they have not furnished us with adequate directions about how these interests are to be determined."[49]

Even in the light of an apparent general agreement on the importance and the place of pupil interests there appears to have been a wide-spread failure to go forward with this matter of interests. Spalding has submitted what he considers

---

[48]David P. Eginton, "Discovering Pupil Interest," Journal of Education, 106:308, June 5, 1933.

[49]F. L. Fitzpatrick, Science Interests (New York: Bureau of Publications, Teachers College, Columbia University, 1936), p. 72.

to be reasons why the schools have failed to encourage the pupils in the development of varied interests:

> First, we have presented facts and more facts on a subject and felt that was all we needed to develop interest; secondly, we have assumed that the only "respectable" interests as the ones which the scholar or the artist favors; and, thirdly, we have not taken their interests and developed them, but instead have imposed ours on them.[50]

Another observation on this matter of the importance of pupil interests and preferences was made by Frederick when he stated:

> The interests of pupils are of vital importance in happy and economical learning. Teachers and school administrators should study and use the desirable interests of pupils effectively in guiding their educational growth. Pupils and teachers should constructively plan, develop, and evaluate the activities in which pupils engage. Teachers and school administrators should guide pupils in developing, broadening, and improving their present interests and facilitate the discovery and cultivation of new and better interests by the pupils. In order to do this the teachers and school administrators must keep in mind constantly the differing needs of the pupils both present and future, as best they can envision them.[51]

Again, to point up the significance of the utilization of interests in the teaching process as well as to indicate the adaptability and flexibility of interests, here is a passage from Bowden and Melbo:

---

[50]Francis T. Spalding, Interest in Learning, Department of Secondary School Principals, National Education Association, Bulletin 74, 22:53, April, 1938.

[51]O. I. Frederick, "Pupil Interests and Needs as a Basis for Curriculum Development," Curriculum Journal, 9:322, November, 1938.

> Interest is a condition of work rather than a quantum which the student brings to his tasks. For that matter, it must be remembered that "interests" are also dirigible, i.e., steerable. If students are required to study something in which they are not interested at first, they may be steered in an active interest in the subject by proper organization and presentation of the work. A skillful teacher can lead children to become interested in almost anything.[52]

Hockett has defined again the place of interest in education:

> Interest then, is an indication that a person is devoting himself to a course of action because of some real or fancied value that it holds for him. If he throws himself into an activity with wholehearted abandon, we say he is strongly interested, but if his efforts are feeble and sporadic we are convinced that his interest is slight. Interest may be considered an indication of the amount of effort an individual is willing to put forth to achieve an objective. Where there is no interest, as John Dewey has repeatedly insisted, there will be no effort. Interests, effort, purpose, aims, values are thus terms whose meanings are closely related.[53]

In the matter of considering the source and background of interests as they are found to exist in children in schools, Lee and Lee have said this:

> Teachers should recognize, however, that these interests have developed largely because of the type of experience a child has had along that particular line. If it fills a need of his, either

---

[52]A. O. Bowden and Irving R. Melbo, Social Psychology of Education (New York: McGraw-Hill Book Company, 1937), p. 134.

[53]John A. Hockett, "Children's Interests and the Educational Program," Children's Interests, Twelfth Yearbook, The California Elementary School Principals' Association, Sacramento, 1940, p. 2.

Interest is a condition of work rather than a quantum which the student brings to his tasks. For that matter, it must be remembered that "interests" are also dirigible, i.e., observable. If students are required to study something in which they are not interested at first, they may be steered in an active interest in the subject by proper organization and presentation of the work. A skillful teacher can lead children to become interested in almost anything.[52]

Hockett has defined again the place of interest in education:

> Interest then, is an indication that a person is devoting himself to a course of action because of some real or fancied value that it holds for him. If he throws himself into an activity with wholehearted abandon, we say he is strongly interested, but if his efforts are feeble and sporadic we are convinced that his interest is slight. Interest may be considered an indication of the amount of effort an individual is willing to put forth to achieve an objective. Where there is no interest, as John Dewey has repeatedly insisted, there will be no effort. Interests, effort, purpose, aims, values are thus terms whose meanings are closely related.[53]

In the matter of considering the source and background of interests as they are found to exist in children in schools, Lee and Lee have said this:

> Teachers should recognize, however, that these interests have developed largely because of the type of experience a child has had along that particular line. If it fills a need of his, either

---

[52] A. O. Bowden and Irving B. Melbo, Social Psychology of Education (New York: McGraw-Hill Book Company, 1937), p. 194.

[53] John A. Hockett, "Children's Interests and the Educational Program," Children's Interests, Twelfth Yearbook, The California Elementary School Principals' Association, Sacramento, 1940, p. 2.

> directly or indirectly by giving him satisfaction of attention or approval he does not otherwise obtain; if his experience with it has been successful and satisfying; if it presents a challenge, a problem which he is able to solve without too much difficulty; if he feels its relationship to himself or his needs, it probably will have developed into an interest. These are worth preserving and deepening if the field of interest is valuable and educative. However, it does not relieve the teacher of her very important job of developing more and broader interests whether the child seems to have already developed interests or not.[54]

The question of the permanence of interests has been raised repeatedly in some of the foregoing studies. An observation on this point has been made by Hartmann:

> Once interests in certain areas have developed the problem arises, "How long will they last?" Some are as ephemeral as the latest fad and others may be as lasting as a serious life purpose. In our practical age, educational and vocational interests are of maximum concern and here it seems that there may be a pronounced impermanence of interests in a specific function with fairly marked stability in a somewhat broader field of related activities. Obviously a shift of interests with expanding horizons is both inevitable and desirable. It would be disastrous if every boy who enjoyed playing with trains on his fourth birthday were to enter the transportation career later in his life![55]

Another very timely caution was offered by Jersild when he stated:

> An educational program that aims to be in line with children's interests should keep in view certain

---

[54]J. Murray Lee and Dorris May Lee, The Child and His Curriculum (New York: D. Appleton-Century Company, 1940), pp. 124-125.

[55]George W. Hartmann, "Interests, Attitudes, and Ideals," in Charles E. Skinner, editor, Educational Psychology (New York: Prentice-Hall Inc., 1936), pp. 99-100.

> basic principles. It is essential to take note of the capacities and potentialities possessed by children at the maturity level being dealt with. It is further essential to appraise the goals or objectives that are pre-eminent in the child's own development at this particular stage. As far as it is possible to find an answer to this question, provisions should be made, again, as far as it is possible, to supply the child with a range of opportunity which will enable him to make choices of his own on the basis of his own experience. Through all of this it is important to remember that interests are acquired even though the basic capacities and motives underlying the enterprise in which the child happens to be interested are a product of growth as well as learning.[56]

In an effort to attempt to summarize the materials and opinions available on this matter of educational interests, Melbo has listed what he called the "tentative statement of dynamic principles of interest":

1. Interests tend to be primarily ego-centric.

2. Interests tend to vary directly in intensity with the emphasis placed upon them in the culture pattern of the group.

3. Permanence of interests tends to develop with the fixing of social status and the crystallization of social habit patterns.

4. Interests tend to be as wide as the community, i.e., the area in which a person has influence.

5. Interests tend to be contagious.

6. Interests tend to exist and develop in terms of specific situations rather than in terms of general traits.

---

[56]Arthur T. Jersild, Child Development and the Curriculum (New York: Bureau of Publications, Teachers College, Columbia University, 1946), p. 165.

basic principles. It is essential to take note of the capacities and potentialities possessed by children at the maturity level being dealt with. It is further essential to appraise the goals or objectives that are pre-eminent in the child's own development at this particular stage. As far as it is possible to find an answer to this question, provisions should be made, again, as far as it is possible, to supply the child with a range of opportunity which will enable him to make choices of his own on the basis of his own experience. Through all of this it is important to remember that interests are acquired even though the basic capacities and motives underlying the enterprise in which the child happens to be interested are a product of growth as well as learning.[80]

In an effort to attempt to summarize the materials and opinions available on this matter of educational interests, Melbo has listed what he called the "tentative statement of dynamic principles of interest":

1. Interests tend to be primarily ego-centric.

2. Interests tend to vary directly in intensity with the emphasis placed upon them in the culture pattern of the group.

3. Permanence of interests tends to develop with the fixing of social status and the crystallization of social habit patterns.

4. Interests tend to be as wide as the community, i.e., the area in which a person has influence.

5. Interests tend to be contagious.

6. Interests tend to exist and develop in terms of specific situations rather than in terms of general traits.

---

[80] Arthur T. Jersild, Child Development and the Curriculum (New York: Bureau of Publications, Teachers College, Columbia University, 1946), p. 156.

7. Interests tend to be concrete rather than abstract, and the direction of development or growth is from the concrete to the abstract.

8. Interests tend to develop from successful adjustments, i.e., we tend to be interested because we succeed rather than succeed because we are interested.

9. The lower the degree of interest the greater the opportunity for change in the expression of interests and conversely.[57]

Fryer summarized his conclusions in this area as follows:

> Of the problems investigated in the study of educational interests, those upon which the most attention has centered seem to be the least significant in the adjustment of the individual. These are the problems related to the prediction of future interests and of educational abilities or achievement. The prediction of educational abilities from estimated interests or from inventoried interests is not high, although it may add slightly to measures of intelligence in the prediction of achievement or scholarship. Educational interests have only a slight relation to abilities, or achievement, in the educational field. This is a similar conclusion to that in the vocational field. This situation would be expected from a review of the investigation into the fluctuation of interests, which indicate that specific educational interests are just as likely to change within a year's time as they are to remain the same. Subjective interests are feelings. They rise and fade away into indifferences, and even become aversions, within a short period. However, it is just as probable as not, in dealing with statistical averages, that educational interests will be the same a year in the future. This is prediction far above a guessing basis when the number of educational subjects available for selection is recalled.[58]

---

[57]Melbo, op. cit., pp. 19-20.

[58]Douglas Fryer, The Measurement of Interests (New York: Henry Holt and Company, 1931), p. 257.

Summary

Possibly the best attempt to summarize the foregoing reports of research and passages from authors in the field would take the form of two simple statements. On the one hand, as far as investigative research indicates, the correlation between expressions of educational preference and educational achievement has not proven sufficiently high to lend itself to predictive qualities. On the other hand, the writers in the field of educational interests and their importance consistently plead for closer consideration of the nature and functions of interests in the learning process; likewise do they point up the need for more definitive studies in this area. The factor of interest in learning still remains an educational problem of major proportions. It is the expressed intention of this study to seek to contribute some additional evidence on the fundamental problem.

CHAPTER THREE

PROCEDURAL ORGANIZATION OF THE STUDY

In describing the procedures employed in this study, attention must first be given to the Boston University project, which is referred to as the Subject Preference Study. In this project a group of graduate students undertook to investigate the subject preferences of fifth grade children in the New England area. Their interest in this question arose from a desire to determine the preference status of the school subjects commonly offered in the fifth grade.

Plans were made and the organization completed to make this a group enterprise, in which each student conducted a particularized investigation in the whole area of subject preference. Their first step was to construct a subject preference pupil check-list form which could be distributed to the schools for pupil response. This form, a copy of which is to be found in the appendix, was evolved as a cooperative enterprise by all the graduate students.

Application was made to the New England School Development Council, a regional study group which combines public school systems for the sharing of ideas and the pooling of resources. The Council accepted the invitation and its entire

CHAPTER THREE

PROCEDURAL ORGANIZATION OF THE STUDY

In describing the procedures employed in this study, attention must first be given to the Boston University project, which is referred to as the Subject Preference Study. In this project a group of graduate students undertook to investigate the subject preferences of fifth grade children in the New England area. Their interest in this question arose from a desire to determine the preference status of the school subjects commonly offered in the fifth grade.

Plans were made and the organization completed to make this a group enterprise, in which each student conducted a particularized investigation in the whole area of subject preference. Their first step was to construct a subject preference pupil check-list form which could be distributed to the schools for pupil response. This form, a copy of which is to be found in the appendix, was evolved as a cooperative enterprise by all the graduate students.

Application was made to the New England School Development Council, a regional study group which combines public school systems for the sharing of ideas and the pooling of resources. The Council accepted the invitation and its entire

membership was opened to the conduct of the subject preference study. At the time of this investigation, 1947-1948, the Council consisted of 65 public school systems in New England. Through the cooperation of these participating members, subject preference responses were elicited from 13,483 fifth grade children. This figure represented the entire fifth grade membership in these school systems. The 65 cities and towns ranged from some of the largest cities in New England to some of the more remote rural sections. There were participating schools in each of the New England states. A total of 543 separate fifth grade classrooms was involved.

For the purpose of this subject preference study the check-list included twelve standard fifth grade school subjects. These were: reading, arithmetic, language or English, penmanship or handwriting, spelling, geography, history, social studies, art or drawing, music, science or nature study, health education. In distributing these forms to the schools, instructions were given to the teachers to modify, in the cases of dual appellation of subjects, to coincide with the local educational terminology used for that particular school subject. For example, either "language" or "English" was to be stricken out in accordance with local practices of naming the subject in that field. This procedure was followed in all other similarly named alternate subjects.

Examination of the check-list will reveal that the child had three steps to perform. First, he was asked to indicate his first choice, his second choice, and his third choice, from the prescribed list, of his favorite subjects. Secondly, he was asked to indicate his reaction to each subject, in terms of "like," "dislike," "neither like nor dislike." Thirdly, he was asked to indicate his reaction to each subject, in terms of "easy" or "hard."

This particular study is concerned only with the first set of reactions the child made: his first, second, and third choices of favorite subjects. By way of defining "subject preferences," as the term is used herein, it should be stated that these preferences are the stated reaction of a child to a prescribed list of twelve fifth grade school subjects, in which he has indicated his first, second, and third preferences for those subjects.

As has been previously indicated, in the Boston University study, the graduate students conducted separate and detailed investigations into various aspects and phases of the preference study. A complete list of these studies, as they have been prepared for masters' theses, is to be found in the appendix. For this particular study, however, the foregoing has described the first procedural step, the process of gathering the children's preference data. These data have formed the basis for this investigation into the relationships

between preferences and achievement.

In the process of describing the procedural steps in the organization of this study, mention is now made of a decision of delimitation. From the outset it had been realized that, since this study sought to determine the relationships between preferences and achievement, the problem of securing adequate measures of achievement would be a difficult one, in certain subject areas. Not only would it be difficult to seek to do this but also would it be extremely impracticable. For one thing, it is an established fact that there is wide diversity and negligible agreement among various school systems in the curricular contents of many of the subject fields. Due to the local autonomy of school systems and because of the common variance in determining the educational offerings, materials, and contents in the courses of study, it was concluded that any attempt to make comparisons, in areas which defied agreement, would be futile. Furthermore, it was realized also that because of this local option and because of the lack of close agreement among curricula, publishers of standardized tests of school achievement have been unable to construct satisfactory tests of achievement which could offer comparable measures, in some of these variable areas. Therefore, it was determined that all efforts to compare preferences with achievement, in this particular investigation, would be limited exclusively to certain more closely

defined and more nearly basic school subjects. The term "basic" is used advisedly in this connection. In other words, it was decided to limit the scope of this investigation to the school subjects whichare more commonly called the "skills" subjects. Specifically, this meant that the school subjects under analysis, in their relations to pupil-expressed preferences, are reading, arithmetic, language, and spelling. This decision has resulted in a treatment of achievement results only in the aforementioned areas and the comparisons of preferences for those subjects only.

The next procedural step was one of selecting a sample of the total subject preference study population, a sample from which achievement measures could be derived. In seeking a group to participate in this study it appeared pertinent to choose schools which would be representative of the various social and economic groups resident in the initial population. In addition, it was felt desirable to select schools which represented rural, urban, and suburban communities. Taking these points into consideration, nine communities were chosen. These nine were taken from three of the six New England states and offered some of the economic and social ranges indicated. These nine communities offered a total participating fifth grade population of 2231 pupils, a figure which comprises 16.12 per cent of the original group contained in the subject preference study. In the particular range of communities

selected are: high economic level urban schools, rural schools, and middle class rural and suburban schools. It is fully recognized that sampling methods may always be open to errors of selection; but an attempt has been made, as indicated above, to strike a representative balance of schools for this testing sample, a balance from the point of view of economic, social, and political factors. This investigation stands in the light of limitations inherent in its selection of a sample.

The third procedural step was the procurement of measures of school achievement. In considering this aspect the logical decision was made to turn to the potentialities offered by standardized school achievement tests, since these are the most commonly used and are undeniably the most valid methods of deriving this information. In regard to the use of standardized test for this purpose, Dunlap has stated:

> A logical place to measure the effect of interest would seem to be where objective, valid, and reliable measures of achievement are available. Certainly these measures will be available in measuring academic achievement in the various tool subjects of the elementary school.[1]

This opinion corroborates the earlier judgment that any valid attempt to determine relationships between subject preferences and subject achievement would probably have to be limited to the more standardized and concrete areas of skills instruction

---

[1]Jack W. Dunlap, "Preferences as Indicators of Achievement," The Journal of Educational Psychology, 26:411-415, September, 1935.

and learning.

Accordingly, the Metropolitan Achievement Test, Intermediate Battery--Partial, Form R was selected to yield the desired standardized measures of school achievement. This battery of tests measured school progress in reading, arithmetic, language, and spelling. These tests were administered to the sample of 2231 pupils and the records of school achievement were achieved in this manner.

The detailed accounts of the methods of treatment and the analyses of data will follow in the next chapter.

and learning.

Accordingly, the Metropolitan Achievement Test, Intermediate Battery--Partial, Form X was selected to yield the desired standardized measures of school achievement. This battery of tests measured school progress in reading, arithmetic, language, and spelling. These tests were administered to the sample of 2231 pupils and the records of school achievement were achieved in this manner.

The detailed accounts of the methods of treatment and the analyses of data will follow in the next chapter.

CHAPTER IV

ANALYSIS OF THE DATA

It has been the purpose of this study to determine the relationships existing between preferences for school subjects and achievement in school subjects. The analysis of data has been organized to indicate:

1. Comparison of the incidence of preference for a school subject, of the first quartile achievement group, with the incidence of preference for a subject, of the fourth quartile achievement group.

2. Achievement of those who selected a subject as first choice in comparison with the achievement of all others who did not select that subject as first preference.

3. Achievement of those who selected a subject as their first, second, or third preference in comparison with the achievement of all others who did not select that subject among their first three preferences.

4. Sex differences in all the various subject areas and preference groups.

5. Comparison of the selected sample with the basic study population, in terms of the percentages of subject preferences made.

CHAPTER IV

ANALYSIS OF THE DATA

It has been the purpose of this study to determine the relationships existing between preferences for school subjects and achievement in school subjects. The analysis of data has been organized to indicate:

1. Comparison of the incidence of preference for a school subject, of the first quartile achievement group, with the incidence of preference for a subject, of the fourth quartile achievement group.

2. Achievement of those who selected a subject as first choice in comparison with the achievement of all others who did not select that subject as first preference.

3. Achievement of those who selected a subject as their first, second, or third preference in comparison with the achievement of all others who did not select that subject among their first three preferences.

4. Sex differences in all the various subject areas and preference groups.

5. Comparison of the selected sample with the basic study population, in terms of the percentages of subject preferences made.

Data from the achievement tests[1] were organized for treatment under the following categories:

1. Reading Comprehension
2. Reading Vocabulary
3. Combined Reading
4. Arithmetic Fundamentals
5. Arithmetic Problems
6. Combined Arithmetic
7. English
8. Spelling

Initial Measures--Matching Sex Groups

The sample selected from the original population for treatment in this investigation consisted of 2231 cases. Since one of the basic analyses to be made, in each subject preference area, was to be on sex differences, chronological age distributions were obtained for the boys and for the girls. In order to establish a basis for comparison of sex differences, in all areas, it was considered necessary to equate the sex groups on the variable of chronological age. This was achieved through a randomized elimination of cases at the various one month age step intervals, until the sex groups were equated on chronological age.

---

[1] Metropolitan Achievement Tests, Intermediate Battery--Partial; Form R (Yonkers-on-Hudson, New York: World Book Company, 1946).

Data from the achievement tests[1] were organized for treatment under the following categories:

1. Reading Comprehension
2. Reading Vocabulary
3. Combined Reading
4. Arithmetic Fundamentals
5. Arithmetic Problems
6. Combined Arithmetic
7. English
8. Spelling

Initial Measures--Matching Sex Groups

The sample selected from the original population for treatment in this investigation consisted of 2283 cases. Since one of the basic analyses to be made, in each subject preference area, was to be on sex differences, chronological age distributions were obtained for the boys and for the girls. In order to establish a basis for comparison of sex differences, in all areas, it was considered necessary to equate the sex groups on the variable of chronological age. This was achieved through a randomized elimination of cases at the various one month age step intervals, until the sex groups were equated on chronological age.

---

[1] Metropolitan Achievement Tests, Intermediate Battery--Partial; Form R (Yonkers-on-Hudson, New York: World Book Company, 1946).

In addition it was desired to equate the groups on the basis of school progress and achievement, in order that a more refined equation between the sex groups would be established. In order to do this the scores of all the tests and subtests in the battery, used to measure achievement, were combined into a single index known as "Composite Achievement," through the computation of the median achievement score of all the test scores. Throughout this study test results in terms of grade equivalent scores have been used. When this composite achievement score had been computed for each case, distributions were established for boys and for girls on this variable. Then a randomized elimination of cases was again effected, until the sex groups had been equated upon the basis of composite achievement.

In this manner the sample population was refined to the point of being equated by sexes on chronological age and on composite achievement. In so doing, 537 cases were withdrawn, which were 24.07 per cent of the initial sample. The next result of these steps of refinement left equally matched sex groups of 847 boys and 847 girls, for a total sample of 1694 cases.

In addition it was desired to equate the groups on the basis of school progress and achievement, in order that a more refined equation between the sex groups would be established. In order to do this the scores of all the tests and subtests in the battery, used to measure achievement, were combined into a single index known as "Composite Achievement," through the computation of the median achievement score of all the test scores. Throughout this study test results in terms of grade equivalent scores have been used. When this composite achievement score had been computed for each case, distributions were established for boys and for girls on this variable. Then a randomized elimination of cases was again effected, until the sex groups had been equated upon the basis of composite achievement.

In this manner the sample population was refined to the point of being equated by sexes on chronological age and on composite achievement. In so doing, 637 cases were withdrawn, which were 24.07 per cent of the initial sample. The next result of these steps of refinement left equally matched sex groups of 847 boys and 847 girls, for a total sample of 1694 cases.

TABLE 1

CHRONOLOGICAL AGES OF SELECTED SAMPLE

	Range	Mean	Standard Deviation	Total
Boys	9-04 to 13-05	10-07.55	8.85	847
Girls	9-04 to 13-05	10-07.55	8.85	847

TABLE 2

COMPOSITE ACHIEVEMENT OF SELECTED SAMPLE

	Range	Mean	Standard Deviation	Total
Boys	3.3 to 9.3	5.817	9.69	847
Girls	3.3 to 9.3	5.817	9.69	847

Results of the data presented in Table 1 and Table 2 give weight to the hypothesis that the sex groups are approximately equal on the basis of two variables. All comparisons presented in the following discussion will be computed on the basis of these matched groups.

Statistical Treatment

Since, from the analysis of the preliminary data, the sex groups are assumed to be equal in chronological age and in composite achievement, any differences found at the close of the investigation can be attributed in part to the variable factors of relationships between preferences and achievement.

TABLE 1

CHRONOLOGICAL AGES OF SELECTED SAMPLE

	Range	Mean	Standard Deviation	Total
Boys	9-04 to 13-05	10-07.55	8.85	847
Girls	9-04 to 13-05	10-07.55	8.85	847

TABLE 2

COMPOSITE ACHIEVEMENT OF SELECTED SAMPLE

	Range	Mean	Standard Deviation	Total
Boys	3.3 to 9.3	5.817	9.89	847
Girls	3.3 to 9.3	5.817	9.89	847

Results of the data presented in Table 1 and Table 2 give weight to the hypothesis that the sex groups are approximately equal on the basis of two variables. All comparisons presented in the following discussion will be computed on the basis of these matched groups.

Statistical Treatment

Since, from the analysis of the preliminary data, the sex groups are assumed to be equal in chronological age and in composite achievement, any differences found at the close of the investigation can be attributed in part to the variable factors of relationship between preferences and achievement.

It is necessary, therefore, to establish a level at which a difference will be considered significant.

Mills[2] makes the following statement:

> If a given difference between hypothetical and observed values would occur as a result of chance one time out of one hundred, or less frequently, we may say that the difference is significant. This means that the results are not consistent with the hypothesis we have set up. If the discrepancy between theory and observation might occur more frequently than one time out of one hundred solely because of the play of chance we may say the difference is not clearly significant. The results are not inconsistent with the hypothesis. The value of T (the difference between the hypothetical value and the observed mean, in units of standard error of the mean) corresponding to a probability of 1/100 is 2.576. One hundredth part of the area under a normal curve lies at a distance from the mean, on the axis, of 2.576 standard deviations or more. According, tests of significance may be applied with direct reference to T, interpreted as a normal deviate (i.e., as a deviation from the mean of a normal distribution expressed in units of standard deviation). A value of T of 2.576 or more indicates a significant difference, while a value of less than 2.576 indicates that the results are not inconsistent with the hypothesis in question.

In the light of the preceding information any differences between comparison groups with a critical ratio of 2.576 or better will be interpreted as statistically significant.

First Quartile Preferences vs. Fourth Quartile Preferences

The first major analysis of the available data took the form of comparing the subject preferences of the first

---

[2] Frederick C. Mills, Statistical Methods, Revised (New York: Henry Holt and Company, 1938), p. 471.

It is necessary, therefore, to establish a level at which a difference will be considered significant.

Mills[2] makes the following statement:

> If a given difference between hypothetical and observed values would occur as a result of chance one time out of one hundred, or less frequently, we may say that the difference is significant. This means that the results are not consistent with the hypothesis we have set up. If the discrepancy between theory and observation might occur more frequently than one time out of one hundred solely because of the play of chance we may say the difference is not clearly significant. The results are not inconsistent with the hypothesis. The value of T (the difference between the hypothetical value and the observed mean, in units of standard error of the mean) corresponding to a probability of 1/100 is 2.576. One hundredth part of the area under a normal curve lies at a distance from the mean, on the axis, of 2.576 standard deviations or more. According, tests of significance may be applied with direct reference to T, interpreted as a normal deviate (i.e., as a deviation from the mean of a normal distribution expressed in units of standard deviation). A value of T of 2.576 or more indicates a significant difference, while a value of less than 2.576 indicates that the results are not inconsistent with the hypothesis in question.

In the light of the preceding information any differences between comparison groups with a critical ratio of 2.576 or better will be interpreted as statistically significant.

First Quartile Preferences vs. Fourth Quartile Preferences

The first major analysis of the available data took the form of comparing the subject preferences of the first

---

[2] Frederick C. Mills, Statistical Methods, Revised (New York: Henry Holt and Company, 1938), p. 471.

achievement quartile with the subject preferences of the fourth achievement quartile. The basis for organization of this analysis was the establishment of distributions of the grade equivalent scores in each of the eight achievement test areas. When these distributions had been set up they formed the organizational basis for a "multiple x" distribution of the preferences. This meant that for each grade equivalent score a tally of the preferences for that subject was made. For example, in reading comprehension 58 boys might have a grade equivalent score of 5.4; and of those 58 boys there might be 21 first preferences for reading, 18 second preferences for reading, 7 third preferences for reading, and 12 no preferences for reading. It is important, in this connection, to understand that "non-preferences" for the particular subject were included in the total tally for each grade equivalent step interval. By definition a "non-preference" is any child who did not make the subject his first choice, on the one hand, or did not include a preference for the given subject among his three choices, on the other hand. Thus, in every case, a balanced total of preference and non-preference for each frequency of test score was realized. On the basis of the distribution of achievement scores in each test, quartiles were determined. The first and fourth quartiles were selected for purposes of comparison. In each of these quartiles the percentage of preferences were computed, within

the quartile. In one instance it meant the percentage of first choices for that particular subject in the first achievement quartile compared with the percentage of first choices for that subject in the fourth achievement quartile. In another instance it meant the percentage of the combined first, second, and third choices for that particular subject in the first achievement quartile compared with the percentage of combined first, second, and third choices for that subject in the fourth achievement quartile. To each pair of contrasting percentages the critical ratio formula was applied to determine the degree of difference. This procedure was followed in each of the eight test and subtest areas; and was likewise conducted with the boys, with the girls, and with the boys and girls combined. In this regard, it is necessary to understand that the expressions of preference, used for statistical treatment, were the choices made only in the area of the particular test under consideration. In other words, with the reading tests, only the reading preferences were considered. With the arithmetic tests, only arithmetic preferences were considered. The same was true in English and in spelling. There was no cross-purposing of preferences, such as, for example, the comparison of reading preferences with arithmetic achievement.

In this manner an analysis has been made of the comparison of the preferences for a given subject between "high achievers"

(the first quartile) and "low achievers" (the fourth quartile), for the purposes of determining the presence of any significant differences between the two contrasting achievement groups.

TABLE 3

READING COMPREHENSION, BOYS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	66	43
Percent	31.27	20.38
$S.E._P$	3.2	2.8
Diff.	10.89	
$S.E._{Diff.}$	4.25	
C.R.	2.562	

The critical ratio of 2.562 shows a difference in favor of the first quartile, but this difference fails by an infinitesimal margin to reach the criterion level established for significance in this study. However, it does indicate a difference that could occur by chance only 1.04 times in one hundred.

(the first quartile) and "low achievers" (the fourth quartile). For the purpose of determining the presence of any significant differences between the two contrasting achievement groups.

TABLE 3

READING COMPREHENSION, BOYS, COMPARISON OF FIRST PRESENTATIONS FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	86	43
Percent	31.27	20.38
S.E. $_{\bar{p}}$	3.2	2.8
Diff.	10.89	
S.E. Diff.	4.25	
C.R.	2.562	

The critical ratio of 2.562 shows a difference in favor of the first quartile, but this difference falls by an insignificant margin to reach the criterion level established for significance in this study. However, it does indicate a difference that could occur by chance only 1.04 times in one hundred.

TABLE 4

READING COMPREHENSION, BOYS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	139	95
Percent	65.87	45.02
$S.E._P$	3.3	3.4
Diff.	20.85	
$S.E._{Diff.}$	.473	
C.R.	4.408	

The critical ratio of 4.408 shows a statistically significant difference in favor of first quartile achievers, boys, in terms of their combined preferences for reading. This indicates a pronounced tendency for boys who have greater achievement in reading to favor reading as a preferred subject.

TABLE 5

READING COMPREHENSION, GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	53	61
Percent	25.11	28.90
$S.E._P$	3.0	3.1
Diff.	3.79	
$S.E._{Diff.}$	4.32	
C.R.	.877	

No significant difference is revealed in this comparison, although the slight difference is in favor of the low achievement group. However, the difference is negligible.

TABLE 5

READING COMPREHENSION, GIRLS, COMPARISON OF FIRST PERCENTAGES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	85	81
Percent	98.11	93.90
S.E. $_{\bar{p}}$	3.0	3.1
Diff.		3.79
S.E. Diff.		4.32
C.R.		.877

No significant difference is revealed in this comparison, although the slight difference is in favor of the low achievement group. However, the difference is negligible.

TABLE 6

READING COMPREHENSION, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	125	114
Percent	59.24	54.02
S.E. $_{P}$	3.4	3.4
Diff.	5 .22	
S.E. $_{Diff.}$	4 .81	
C.R.	1 .085	

The difference in total combined choices for reading between the contrasting quartiles is small and is not statistically significant, it being possible for this difference to occur 28 times out of 100 by chance.

TABLE 6

READING COMPREHENSION, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	125	114
Percent	59.24	54.05
S.E. P	3.4	3.4
Diff.	5.25	
S.E. Diff.	4.81	
C.R.	1.085	

The difference in total combined choices for reading between the contrasting quartiles is small and is not statistically significant, it being possible for this difference to occur 28 times out of 100 by chance.

TABLE 7

READING COMPREHENSION, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	124	104
Percent	29.31	23.64
S.E. $_{P}$	2.2	2.1
Diff.	5.67	
S.E. $_{Diff.}$	3.04	
C.R.	1.865	

The difference between the quartiles is found to be not statistically significant, for the chances are only 94 out of 100 that this is a true difference.

TABLE V

READING COMPREHENSION, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	134	104
Percent	29.31	22.66
S.E. $_P$	2.2	2.1
Diff.	5.87	
S.E. Diff.	3.04	
C.R.	1.885	

The difference between the quartiles is found to be not statistically significant, for the chances are only 94 out of 100 that this is a true difference.

TABLE 8

READING COMPREHENSION, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	280	209
Percent	66.19	49.40
S.E. $_{P}$	2.3	2.4
Diff.	16.79	
S.E. $_{Diff.}$	3.34	
C.R.	5.026	

The first quartile group shows a significant difference in combined percentage of preference for reading over the fourth quartile group.

TABLE 8

READING COMPREHENSION, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	280	309
Per-cent	66.19	49.60
S.E. $\bar{p}$	3.3	2.4
DIFF.	16.79	
S.E. DIFF.	3.34	
C.R.	5.029	

The first quartile group shows a significant difference in combined percentage of preference for reading over the fourth quartile group.

TABLE 9

READING VOCABULARY, BOYS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	60	41
Percent	28.30	19.33
$S.E._P$	3.1	2.7
Diff.	8.97	
$S.E._{Diff.}$	4.11	
C.R.	2.182	

The critical ratio of 2.182 fails to show a statistically significant difference for reading preferences of boys, in reading vocabulary, between the first and fourth quartiles. It does show, however, a difference that could appear by chance about only 3 times out of 100; but this is not significant according to the criterion set up for this study.

TABLE 9

READING VOCABULARY, BOYS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	80	41
Percent	28.30	19.33
S.E. $\hat{p}$	3.1	2.7
Diff.	8.97	
S.E. Diff.	4.11	
C.R.	2.182	

The critical ratio of 2.182 fails to show a statistically significant difference for reading preferences of boys, in reading vocabulary, between the first and fourth quartiles. It does show, however, a difference that could appear by chance about only 3 times out of 100; but this is not significant according to the criterion set up for this study.

TABLE 10

READING VOCABULARY, BOYS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	139	94
Percent	65.56	44.33
S.E. $_{P}$	3.3	3.4
Diff.	21.23	
S.E. $_{Diff.}$	4.72	
C.R.	4.518	

The difference in combined preferences, for boys in reading vocabulary, is found to be statistically significant.

TABLE 10

READING VOCABULARY, BOYS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	139	84
Percent	65.88	44.38
S.E. p	3.3	3.4
Diff.	21.25	
S.E. Diff.	4.72	
C.R.	4.518	

The difference in combined preferences, for boys in reading vocabulary, is found to be statistically significant.

TABLE 11

READING VOCABULARY, GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	54	55
Percent	25.47	25.94
S.E. $_{P}$	3.0	3.0
Diff.	.47	
S.E. $_{Diff.}$	4.24	
C.R.	.110	

No significant difference is found between the first quartile and the fourth quartile for girls, in reading vocabulary, although the slight difference is in favor of the fourth quartile group.

TABLE 12

READING VOCABULARY, GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	54	55
Percent	25.47	25.94
S.E. $_{P}$	3.0	3.0
Diff.	.47	
S.E. Diff.	4.24	
C.R.	.110	

No significant difference is found between the first quartile and the fourth quartile for girls, in reading vocabulary, although the slight difference is in favor of the fourth quartile group.

TABLE 12

READING VOCABULARY, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	131	113
Percent	61.79	53.30
$S.E._P$	3.3	3.4
Diff.	8.49	
$S.E._{Diff.}$	4.73	
C.R.	1.794	

The percentage difference of 8.49 for combined preferences, girls, in reading vocabulary, is found to be not statistically significant.

TABLE IX

READING VOCABULARY, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	131	119
Percent	61.79	56.20
S.E.$_p$	3.3	3.4
Diff.	8.49	
S.E. Diff.	4.75	
C.R.	1.794	

The percentage difference of 8.49 for combined preferences, girls, in reading vocabulary, is found to be not statistically significant.

TABLE 13

READING VOCABULARY, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	117	89
Percent	27.59	20.99
S.E. $_P$	2.2	1.9
Diff.	6.60	
S.E. Diff.	2.91	
C.R.	2.268	

The difference in percentages of choices for reading, boys and girls, in reading vocabulary, indicates a trend but fails the criterion level of statistical significance, since it could occur by chance 2.38 times out of one hundred.

TABLE 14

READING VOCABULARY, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	227	191
Percent	53.53	45.04
$S.E._P$	2.4	2.4
Diff.	8.49	
$S.E._{Diff.}$	3.39	
C.R.	2.504	

The critical ratio of 2.504 between percentages of combined first, second, and third preferences for reading, boys and girls, reading vocabulary, is not statistically significant.

TABLE 14

READING VOCABULARY, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	227	191
Percent	53.53	45.04
S.E. P	2.4	2.4
Diff.		8.49
S.E. Diff.		3.39
C.R.		2.504

The critical ratio of 2.504 between percentages of combined first, second, and third preferences for reading, boys and girls, reading vocabulary, is not statistically significant.

TABLE 15

COMBINED READING, BOYS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	63	40
Percent	29.71	18.86
S.E. $_{P}$	3.1	2.6
Diff.	10.85	
S.E. $_{Diff.}$	4.08	
C.R.	2.569	

The comparison of first preferences for reading, boys, combined reading scores, between first quartile and fourth quartile, reveals a statistically significant difference in favor of the first quartile group.

TABLE 15

COMBINED READING, BOYS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	65	40
Percent	29.71	18.86
S.E. $\hat{p}$	3.1	2.6
Diff.	10.85	
S.E. Diff.	4.08	
C.R.	2.660	

The comparison of first preferences for reading, boys, combined reading scores, between first quartile and fourth quartile, reveals a statistically significant difference in favor of the first quartile group.

TABLE 16

COMBINED READING, BOYS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	148	98
Percent	69.81	46.22
S.E. $_P$	3.2	3.4
Diff.	23.59	
S.E. $_{Diff.}$	4.63	
C.R.	5.093	

The first quartile group shows a statistically significant difference over the fourth quartile group, in terms of combined reading, boys, combined first, second, and third preferences for reading.

TABLE 17

COMBINED READING, GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	51	62
Percent	24.05	29.24
S.E. $_{P}$	2.9	3.1
Diff.		5.19
S.E. $_{Diff.}$		4.26
C.R.		1.220

No significant difference is found between the first quartile and the fourth quartile for girls, in combined reading, although there is a difference in favor of the fourth quartile group.

TABLE IV

COMBINED READING, GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	51	62
Percent	24.05	29.24
S.E. $_{p}$	2.9	3.1
Diff.	5.19	
S.E. Diff.	4.25	
C.R.	1.220	

No significant difference is found between the first quartile and the fourth quartile for girls, in combined reading, although there is a difference in favor of the fourth quartile group.

TABLE 18

COMBINED READING, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	133	116
Percent	62.73	54.71
$S.E._P$	3.3	3.4
Diff.	8.02	
$S.E._{Diff.}$	4.72	
C.R.	1.692	

The percentage difference of 8.02 for combined preferences, girls, combined reading, between first quartile and fourth quartile is found to be not statistically significant.

TABLE IX

COMBINED READING, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	133	116
Percent	62.75	54.71
S.E. $_{\bar{p}}$	3.3	3.4
Diff.	8.02	
S.E. Diff.	4.72	
C.R.	1.892	

The percentage difference of 8.02 for combined preferences, girls, combined reading, between first quartile and fourth quartile is found to be not statistically significant.

TABLE 19

COMBINED READING, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	116	97
Percent	28.78	22.93
S.E. $_P$	2.2	2.0
Diff.	5.85	
S.E. $_{Diff.}$	2.97	
C.R.	2.010	

The difference in percentages of choice for reading, boys and girls, in combined reading fails to reveal a statistically significant difference between the first quartile and the fourth quartile.

TABLE 20

COMBINED READING, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR READING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	285	197
Percent	67.37	46.57
$S.E._P$	2.3	2.4
Diff.	20.80	
$S.E._{Diff.}$	3.32	
C.R.	6.264	

The critical ratio of 6.264 indicates a statistically significant difference in favor of the first quartile, combined reading, boys and girls, combined first, second, and third preferences for reading.

TABLE 21

ARITHMETIC FUNDAMENTALS, BOYS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	56	35
Percent	26.41	16.50
$S.E._P$	3.0	2.5
Diff.	9.91	
$S.E._{Diff.}$	3.90	
C.R.	2.541	

The comparison of first preferences for arithmetic, boys, arithmetic fundamentals, between first quartile and fourth quartile, reveals a difference that just fails to reach the criterion level established for this study, although the difference would occur by chance only 1.1 times out of one hundred.

TABLE 21

ARITHMETIC FUNDAMENTALS, BOYS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	56	35
Percent	26.41	16.50
S.E. $_P$	3.0	2.5
Diff.	9.91	
S.E. Diff.	3.90	
C.R.	2.541	

The comparison of first preferences for arithmetic, boys, arithmetic fundamentals, between first quartile and fourth quartile, reveals a difference that just fails to reach the criterion level established for this study, although the difference would occur by chance only 1.1 times out of one hundred.

TABLE 22

ARITHMETIC FUNDAMENTALS, BOYS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	132	88
Percent	62.26	41.51
$S.E._P$	3.3	3.4
Diff.	20.75	
$S.E._{Diff.}$	4.74	
C.R.	4.398	

The first quartile group shows a statistically significant difference over the fourth quartile group, in terms of arithmetic fundamentals, boys, combined first, second, and third preferences for arithmetic.

TABLE 23

ARITHMETIC FUNDAMENTALS, GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	49	30
Percent	23.11	14.15
$S.E._P$	2.9	2.4
Diff.	8.96	
$S.E._{Diff.}$	3.77	
C.R.	2.376	

No significant difference is found between the first quartile and the fourth quartile for girls, in arithmetic fundamentals, first preferences for arithmetic.

TABLE 25

ARITHMETIC FUNDAMENTALS, GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	49	30
Percent	23.11	14.15
S.E. P	2.9	2.4
DIFF.	8.96	
S.E. DIFF.	3.77	
C.R.	2.376	

No significant difference is found between the first quartile and the fourth quartile for girls, in arithmetic fundamentals, first preferences for arithmetic.

TABLE 24

ARITHMETIC FUNDAMENTALS, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND THE FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	129	108
Percent	60.84	50.94
$S.E._P$	3.4	3.4
Diff.	9.90	
$S.E._{Diff.}$	4.80	
C.R.	2.083	

The percentage difference of 9.90 for combined preferences, girls, arithmetic fundamentals, between first quartile and fourth quartile, is found to be not statistically significant.

TABLE 24

ARITHMETIC FUNDAMENTALS, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND THE FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	139	108
Percent	80.64	80.94
S.E.$_p$	3.4	3.4
Diff.	9.30	
S.E. Diff.	4.80	
C.R.	2.083	

The percentage difference of 9.30 for combined preferences, girls, arithmetic fundamentals, between first quartile and fourth quartile, is found to be not statistically significant.

TABLE 25

ARITHMETIC FUNDAMENTALS, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	113	63
Percent	26.65	14.85
$S.E._P$	2.1	1.6
Diff.	11.80	
$S.E._{Diff.}$	2.64	
C.R.	4.469	

The critical ratio of 4.469 indicates a significant difference between the first quartile and the fourth quartile, arithmetic fundamentals, boys and girls, first preferences for arithmetic, in favor of the first quartile group.

TABLE 28

ARITHMETIC FUNDAMENTALS, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	113	63
Percent	26.65	14.85
S.E. $_P$	2.1	1.6
DIFF.	11.80	
S.E. DIFF.	2.64	
C.R.	4.469	

The critical ratio of 4.469 indicates a significant difference between the first quartile and the fourth quartile, arithmetic fundamentals, boys and girls, first preferences for arithmetic, in favor of the first quartile group.

TABLE 26

ARITHMETIC FUNDAMENTALS, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	284	181
Percent	66.98	45.04
$S.E._P$	2.4	2.3
Diff.	21.94	
$S.E._{Diff.}$	3.32	
C.R.	6.608	

The percentage difference of 21.94 for combined preferences, boys and girls, arithmetic fundamentals, is found to be statistically significant.

TABLE 26

ARITHMETIC FUNDAMENTALS, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	894	181
Percent	83.98	46.04
S.E. $_P$	2.4	2.3
Diff.	21.94	
S.E. Diff.	3.32	
C.R.	6.609	

The percentage difference of 21.94 for combined preferences, boys and girls, arithmetic fundamentals, is found to be statistically significant.

TABLE 27

ARITHMETIC PROBLEMS, BOYS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	53	36
Percent	25.11	17.06
S.E. $_P$	3.0	2.6
Diff.	8.05	
S.E. $_{Diff.}$	3.97	
C.R.	2.052	

The comparison of first preferences for arithmetic, boys, arithmetic problems, between first quartile and fourth quartile, fails to reveal a statistically significant difference, although the actual difference is in favor of the first quartile.

TABLE XV

ARITHMETIC PROBLEMS, BOYS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	53	36
Percent	25.11	17.06
S.E. $_P$	3.0	2.6
Diff.	8.05	
S.E. Diff.	3.87	
C.R.	2.082	

The comparison of first preferences for arithmetic, boys, arithmetic problems, between first quartile and fourth quartile, fails to reveal a statistically significant difference, although the actual difference is in favor of the first quartile.

TABLE 28

ARITHMETIC PROBLEMS, BOYS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	120	88
Percent	56.87	41.70
$S.E._P$	3.4	3.4
Diff.	15.17	
$S.E._{Diff.}$	4.80	
C.R.	3.160	

The first quartile group shows a statistically significant difference over the fourth quartile group in terms of arithmetic problems, boys, combined first, second, and third preferences for arithmetic.

TABLE 89

ARITHMETIC PROBLEMS, BOYS. COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	120	88
Percent	58.87	41.70
S.E. P	3.4	3.4
Diff.	15.17	
S.E. Diff.	4.80	
C.R.	3.160	

The first quartile group shows a statistically significant difference over the fourth quartile group in terms of arithmetic problems, boys, combined first, second, and third preferences for arithmetic.

TABLE 29

ARITHMETIC PROBLEMS, GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	47	31
Percent	22.27	14.69
S.E. $_{P}$	2.9	2.4
Diff.	7.58	
S.E. $_{Diff.}$	3.76	
C.R.	2.015	

No significant difference is found between the first quartile and the fourth quartile for girls, in arithmetic problems, first preferences for arithmetic.

TABLE 29

ARITHMETIC PROBLEMS, GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Obtainable	1st Quartile	4th Quartile
N	47	31
Percent	22.27	14.69
S.E.$_p$	2.9	2.4
Diff.	7.58	
S.E. Diff.	3.76	
C.R.	2.015	

No significant difference is found between the first quartile and the fourth quartile for girls, in arithmetic problems, first preferences for arithmetic.

TABLE 30

ARITHMETIC PROBLEMS, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND THE FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	127	94
Percent	60.19	44.54
$S.E._P$	3.4	3.4
Diff.	15.65	
$S.E._{Diff.}$	4.80	
C.R.	3.260	

The percentage difference of 15.65 for combined preferences, girls, arithmetic problems, between first quartile and fourth quartile, is found to be statistically significant.

TABLE 30

ARITHMETIC PROBLEMS, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND THE FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	127	94
Percent	60.19	44.54
S.E. $_{P}$	3.4	3.4
Diff.	15.65	
S.E. Diff.	4.80	
C.R.	3.260	

The percentage difference of 15.65 for combined preferences, girls, arithmetic problems, between first quartile and fourth quartile, is found to be statistically significant.

TABLE 31

ARITHMETIC PROBLEMS, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	106	67
Percent	25.06	15.84
$S.E._P$	2.1	1.7
Diff.	9.22	
$S.E._{Diff.}$	2.70	
C.R.	3.414	

The critical ratio of 3.414 indicates a significant difference between the first quartile and fourth quartile, arithmetic problems, boys and girls, first preferences for arithmetic, in favor of the first quartile group.

TABLE 31

ARITHMETIC PROBLEMS, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	105	67
Percent	25.05	15.94
S.E.$_P$	2.1	1.7
Diff.	9.22	
S.E.$_{Diff.}$	2.70	
C.R.	3.414	

The critical ratio of 3.414 indicates a significant difference between the first quartile and fourth quartile, arithmetic problems, boys and girls, first preferences for arithmetic, in favor of the first quartile group.

TABLE 32

ARITHMETIC PROBLEMS, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	251	177
Percent	59.33	41.48
$S.E._P$	2.4	2.4
Diff.	17.49	
$S.E._{Diff.}$	3.39	
C.R.	5.169	

The percentage difference of 17.49 for combined preferences, boys and girls, arithmetic problems, is found to be statistically significant.

TABLE 32

ARITHMETIC PROBLEMS, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	251	177
Percent	58.55	41.45
S.E. $_P$	2.4	2.4
Diff.	17.49	
S.E. Diff.	3.39	
C.R.	5.159	

The percentage difference of 17.49 for combined preferences, boys and girls, arithmetic problems, is found to be statistically significant.

TABLE 33

COMBINED ARITHMETIC, BOYS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	57	34
Percent	27.01	16.11
S.E. $_P$	3.1	2.5
Diff.	10.90	
S.E. $_{Diff.}$	3.98	
C.R.	2.738	

The comparison of first preferences for arithmetic, boys, combined arithmetic, between first quartile and fourth quartile indicates a statistically significant critical ratio of 2.738.

TABLE 32

COMBINED ARITHMETIC, BOYS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	87	84
Percent	87.01	16.11
S.E. P	3.1	3.8
Diff.	10.90	
S.E. Diff.	3.98	
C.R.	2.738	

The comparison of first preferences for arithmetic, boys, combined arithmetic, between first quartile and fourth quartile indicates a statistically significant critical ratio of 2.738.

TABLE 34

COMBINED ARITHMETIC, BOYS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	127	91
Percent	60.18	43.12
$S.E._P$	3.4	3.4
Diff.	17.06	
$S.E._{Diff.}$	4.79	
C.R.	3.561	

The first quartile group shows a statistically significant difference over the fourth quartile group in terms of combined arithmetic scores, boys, combined first, second, and third preferences for arithmetic.

TABLE 34

COMBINED ARITHMETIC, BOYS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	127	91
Percent	60.18	43.12
S.E. $_{P}$	3.4	3.4
Diff.	17.06	
S.E. Diff.	4.79	
C.R.	3.561	

The first quartile group shows a statistically significant difference over the fourth quartile group in terms of combined arithmetic scores, boys, combined first, second, and third preferences for arithmetic.

TABLE 35

COMBINED ARITHMETIC, GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	48	30
Percent	22.74	14.26
S.E. $_P$	2.9	2.4
Diff.	8.48	
S.E. $_{Diff.}$	3.76	
C.R.	2.324	

The percentage difference of 8.48 between the first quartile and fourth quartile for girls, first preferences for arithmetic, in combined arithmetic scores, is found not to be statistically significant; although it misses the criterion level by a very small margin. This difference would occur by chance only 2 times out of one hundred.

TABLE 55

COMBINED ARITHMETIC, GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	45	30
Percent	25.7%	14.2%
S.E. P	2.3	2.4
Diff.	8.43	
S.E. Diff.	3.7%	
C.R.	2.324	

The percentage difference of 8.43 between the first quartile and fourth quartile for girls, first preferences for arithmetic, in combined arithmetic scores, is found not to be statistically significant; although it misses the criterion level by a very small margin. This difference would occur by chance only 2 times out of one hundred.

TABLE 36

COMBINED ARITHMETIC, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND THE FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	133	101
Percent	63.03	47.86
$S.E._P$	3.3	3.4
Diff.	15.27	
$S.E._{Diff.}$	4.73	
C.R.	3.862	

The percentage difference of 15.27 for combined preferences, girls, combined arithmetic scores, between the first quartile and the fourth quartile, is found to be statistically significant in favor of the first quartile.

TABLE 36

COMBINED ARITHMETIC, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND THE FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	135	101
Percent	63.03	47.36
S.E. $_{\bar{P}}$	3.3	3.4

Diff.	15.27
S.E. Diff.	4.73
C.R.	3.882

The percentage difference of 15.27 for combined preferences, girls, combined arithmetic scores, between the first quartile and the fourth quartile, is found to be statistically significant in favor of the first quartile.

TABLE 37

COMBINED ARITHMETIC, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND THE FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	103	53
Percent	24.23	13.08
$S.E._P$	2.1	1.6
Diff.	11.15	
$S.E._{Diff.}$	2.64	
C.R.	4.219	

The critical ratio of 4.219 indicates a significant difference between the first quartile group and the fourth quartile group, combined arithmetic scores, boys and girls, first preferences for arithmetic, in favor of the first quartile group.

TABLE 37

COMBINED ARITHMETIC, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND THE FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	108	53
Percent	64.25	15.09
S.E. $_{P}$	2.1	1.9
DIFF.	11.15	
S.E. DIFF.	2.64	
C.R.	4.219	

The critical ratio of 4.219 indicates a significant difference between the first quartile group and the fourth quartile group, combined arithmetic scores, boys and girls, first preferences for arithmetic, in favor of the first quartile group.

TABLE 38

COMBINED ARITHMETIC, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	255	167
Percent	60.14	39.38
$S.E._P$	2.4	2.4
Diff.	20.76	
$S.E._{Diff.}$	3.39	
C.R.	6.123	

The percentage difference of 20.76 for combined preferences, boys and girls, combined arithmetic scores, is found to be statistically significant in favor of the first quartile.

TABLE 36

COMBINED ARITHMETIC, BOYS AND GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR ARITHMETIC, BETWEEN THE FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	356	167
Percent	60.14	39.86
S.E. $_{P}$	2.4	2.4
Diff.	20.76	
S.E. Diff.	3.39	
C.R.	6.125	

The percentage difference of 20.76 for combined preferences, boys and girls, combined arithmetic scores, is found to be statistically significant in favor of the first quartile.

TABLE 39

ENGLISH, BOYS, COMPARISON OF FIRST PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	1	1
Percent	.47	.47
S.E. $_P$	.7	.7
Diff.	.000	
S.E. $_{Diff.}$	.98	
C.R.	.000	

Since the percentages of the first quartile and the fourth quartile were in agreement there is no actual differences between the quartiles.

TABLE 59

ENGLISH, BOYS, COMPARISON OF FIRST PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	1	1
Percent	.47	.47
S.E. $_P$	.7	.7
DIFF.	.000	
S.E. DIFF.	.98	
C.R.	.000	

Since the percentages of the first quartile and the fourth quartile were in agreement there is no actual difference between the quartiles.

TABLE 40

ENGLISH, BOYS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	13	7
Percent	6.16	3.31
S.E. $_P$	1.6	1.2
Diff.	2.85	
S.E. $_{Diff.}$	2.00	
C.R.	1.425	

The critical ratio of 1.425 indicates no statistically significant difference between the first quartile and the fourth quartile, English, boys, combined first, second, and third preferences for language.

TABLE 40

ENGLISH, BOYS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	13	7
Percent	6.16	3.81
S.E. $_{P}$	1.6	1.2
Diff.	2.35	
S.E. Diff.	2.00	
C.R.	1.175	

The critical ratio of 1.175 indicates no statistically significant difference between the first quartile and the fourth quartile, English, boys, combined first, second, and third preferences for language.

TABLE 41

ENGLISH, GIRLS, COMPARISON OF FIRST PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	2	1
Percent	.94	.47
S.E. $_P$	.7	.7
Diff.	.47	
S.E. $_{Diff.}$	.98	
C.R.	.479	

There is no statistically significant difference between the percentages of choice, English, girls, first preferences for language, first quartile and fourth quartile.

TABLE 41

ENGLISH, GIRLS, COMPARISON OF FIRST PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	2	1
Percent	.94	.47
S.E. $\bar{p}$	.7	.7
Diff.	.47	
S.E. Diff.	.98	
C.R.	.479	

There is no statistically significant difference between the percentages of choice, English, girls, first preferences for language, first quartile and fourth quartile.

TABLE 42

ENGLISH, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	15	11
Percent	7.10	5.21
S.E. $_{P}$	1.8	1.5
Diff.	1.89	
S.E. $_{Diff.}$	2.33	
C.R.	.811	

There is no statistically significant difference between the percentages of choice, English, girls, combined first, second, and third preferences for language, first quartile and fourth quartile.

TABLE 42

ENGLISH, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	Last Quartile	4th Quartile
N	15	11
Percent	7.10	5.21
S.E. $_{\bar{p}}$	1.8	1.5
Diff.	1.89	
S.E. Diff.	2.53	
C.R.	.811	

There is no statistically significant difference between the percentages of choice, English, girls, combined first, second, and third preferences for language, first quartile and fourth quartile.

TABLE 43

ENGLISH, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	3	3
Percent	.71	.71
S.E. P	.09	.09
Diff.	.000	
S.E. Diff.	.424	
C.R.	.000	

Since the percentages of the first quartile and the fourth quartile are in agreement there is no actual difference between the quartiles.

TABLE 49

ENGLISH, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	3	3
Percent	.71	.71
S.E. P	.09	.09
Diff.	.000	
S.E. Diff.	.424	
C.R.	.000	

Since the percentages of the first quartile and the fourth quartile are in agreement there is no actual difference between the quartiles.

TABLE 44

ENGLISH, BOYS AND GIRLS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	23	22
Percent	5.46	5.22
S.E. $_{P}$	1.1	1.1
Diff.	.24	
S.E. $_{Diff.}$	1.55	
C.R.	.154	

There is no statistically significant difference between first quartile and fourth quartile, English, boys and girls, combined first, second, and third preferences for language.

TABLE 44

ENGLISH, BOYS AND GIRLS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR LANGUAGE, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	23	22
Percent	5.46	5.22
S.E. $_P$	1.1	1.1
Diff.	.24	
S.E. Diff.	1.55	
C.R.	.154	

There is no statistically significant difference between first quartile and fourth quartile, English, boys and girls, combined first, second, and third preferences for language.

TABLE 45

SPELLING, BOYS, COMPARISON OF FIRST PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	19	10
Percent	9.00	4.73
$S.E._P$	2.0	1.3
Diff.		4.27
$S.E._{Diff.}$		2.38
C.R.		1.790

The critical ratio of 1.790 does not indicate a statistically significant difference between first quartile and fourth quartile, spelling, boys, first preferences for spelling.

TABLE 49

SPELLING, BOYS, COMPARISON OF FIRST PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	19	10
Percent	9.00	4.73
S.E. $_{p}$	8.0	1.3

DIFF.	4.27
S.E. DIFF.	2.58
C.R.	1.790

The critical ratio of 1.790 does not indicate a statistically significant difference between first quartile and fourth quartile, spelling, boys, first preferences for spelling.

TABLE 46

SPELLING, BOYS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	95	54
Percent	45.02	25.59
$S.E._P$	3.4	3.0
Diff.	19.43	
$S.E._{Diff.}$	4.53	
C.R.	4.280	

The critical ratio of 4.280 reveals a significant difference between first and fourth quartiles, spelling, boys, combined first, second, and third preferences for spelling, in favor of the first quartile.

TABLE 46

SPELLING, BOYS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	95	84
Percent	45.02	25.59
S.E. P	3.4	3.0
Diff.	19.43	
S.E. Diff.	4.83	
C.R.	4.280	

The critical ratio of 4.280 reveals a significant difference between first and fourth quartiles, spelling, boys, combined first, second, and third preferences for spelling, in favor of the first quartile.

TABLE 47

SPELLING, GIRLS, COMPARISON OF FIRST PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	32	22
Percent	15.16	10.42
S.E. $_{P}$	2.5	2.1
Diff.	4.74	
S.E. $_{Diff.}$	3.26	
C.R.	1.454	

There is no statistically significant difference between first quartile and fourth quartile, spelling, girls, first preferences for spelling.

TABLE 47

SPELLING, GIRLS, COMPARISON OF FIRST PREFERENCES FOR SPELLING BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	32	22
Percent	15.16	10.42
S.E. $\hat{p}$	2.8	2.1
Diff.	4.74	
S.E. Diff.	3.36	
C.R.	1.454	

There is no statistically significant difference between first quartile and fourth quartile, spelling, girls, first preferences for spelling.

TABLE 48

SPELLING, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	101	93
Percent	47.86	44.09
$S.E._P$	3.4	3.4
Diff.	3.79	
$S.E._{Diff.}$	4.80	
C.R.	.789	

There is no statistically significant difference between first quartile and fourth quartile, spelling, girls, combined first, second, and third preferences for spelling.

TABLE 46

SPELLING, GIRLS, COMPARISON OF COMBINED FIRST, SECOND, AND THIRD PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	101	93
Percent	47.86	44.09
S.E. $_P$	3.4	3.4
Diff.	3.79	
S.E. Diff.	4.80	
C.R.	.789	

There is no statistically significant difference between first quartile and fourth quartile, spelling, girls, combined first, second, and third preferences for spelling.

TABLE 49

SPELLING, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	50	28
Percent	11.84	6.63
$S.E._P$	1.5	1.2
Diff.	5.21	
$S.E._{Diff.}$	1.92	
C.R.	2.713	

The critical ratio of 2.713 reveals a statistically significant difference between first quartile and fourth quartile, spelling, boys and girls, first preferences for spelling, in favor of the first quartile.

TABLE 49

SPELLING, BOYS AND GIRLS, COMPARISON OF FIRST PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	50	28
Percent	11.84	8.65
S.E. p	1.5	1.2

Diff.	3.21
S.E. Diff.	1.92
C.R.	2.713

The critical ratio of 2.713 reveals a statistically significant difference between first quartile and fourth quartile, spelling, boys and girls, first preferences for spelling, in favor of the first quartile.

TABLE 50

SPELLING, BOYS AND GIRLS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	190	140
Percent	45.02	33.17
$S.E._P$	2.4	2.3
Diff.	11.85	
$S.E._{Diff.}$	3.32	
C.R.	3.569	

The critical ratio of 3.569 reveals a statistically significant difference between first quartile and fourth quartile, spelling, boys and girls, combined first, second, and third preferences for spelling, in favor of the first quartile group.

TABLE 50

SPELLING, BOYS AND GIRLS, COMPARISON OF FIRST, SECOND, AND THIRD PREFERENCES FOR SPELLING, BETWEEN FIRST QUARTILE AND FOURTH QUARTILE

Statistic	1st Quartile	4th Quartile
N	130	140
Percent	48.08	33.17
S.E. $_{P}$	2.4	2.3
Diff.	11.89	
S.E. Diff.	3.32	
C.R.	3.580	

The critical ratio of 3.580 reveals a statistically significant difference between first quartile and fourth quartile, spelling, boys and girls, combined first, second, and third preferences for spelling, in favor of the first quartile group.

TABLE 51

SUMMARY OF CRITICAL RATIOS: COMPARISONS OF FIRST QUARTILE WITH FOURTH QUARTILE, ON THE BASIS OF ACHIEVEMENT TEST SCORES: BOYS, GIRLS, AND BOYS AND GIRLS COMBINED: FIRST PREFERENCES, AND FIRST, SECOND, AND THIRD PREFERENCES COMBINED

Test	Preference	Boys	Girls	Boys and Girls
Reading Comprehension	First	2.562	.877	1.865
Reading Comprehension	Combined	4.408	1.085	5.026
Reading Vocabulary	First	2.812	.110	2.268
Reading Vocabulary	Combined	4.518	1.794	2.504
Combined Reading	First	2.569	1.220	2.010
Combined Reading	Combined	5.093	1.692	6.264
Arithmetic Fundamentals	First	2.541	2.376	4.469
Arithmetic Fundamentals	Combined	4.398	2.083	6.608
Arithmetic Problems	First	2.052	2.015	3.414
Arithmetic Problems	Combined	3.160	3.260	5.169
Combined Arithmetic	First	2.738	2.324	4.219
Combined Arithmetic	Combined	3.561	3.862	6.123
English	First	-----	.479	-----
English	Combined	1.425	.811	.154
Spelling	First	1.790	1.454	2.713
Spelling	Combined	4.280	.789	3.569

TABLE 61

SUMMARY OF CRITICAL RATIOS; COMPARISONS OF FIRST FOURTH QUARTILE WITH FOURTH QUARTILE, ON THE BASIS OF ACHIEVEMENT TEST SCORES; BOYS, GIRLS, AND BOYS AND GIRLS COMBINED; FIRST PERFORMANCES, AND FIRST, SECOND, AND THIRD PERFORMANCES COMBINED

Test	Preference	Boys	Girls	Boys and Girls
Reading Comprehension	First	2.268	.877	1.868
Reading Comprehension	Combined	4.408	1.088	5.088
Reading Vocabulary	First	2.818	.110	2.668
Reading Vocabulary	Combined	4.178	1.704	4.504
Combined Reading	First	2.268	1.280	3.010
Combined Reading	Combined	5.092	1.682	6.284
Arithmetic Fundamentals	First	2.867	2.678	4.468
Arithmetic Fundamentals	Combined	4.268	2.968	6.608
Arithmetic Problems	First	2.028	2.414	3.474
Arithmetic Problems	Combined	5.180	2.320	5.160
Combined Arithmetic	First	2.728	2.284	4.278
Combined Arithmetic	Combined	5.882	2.882	6.152
English	First	.478	.454	.764
English	Combined	1.428	.871	---
Spelling	First	1.760	1.484	3.272
Spelling	Combined	4.260	.768	5.228

Summary: 1st Quartile Preferences vs. 4th Quartile Preferences

1. Subjects:
   A. Reading Comprehension--significant differences were found in two out of six possible cases.
   B. Reading Vocabulary--significant differences were found in two out of six possible cases.
   C. Combined Reading--significant differences were found in two out of six possible cases.
   D. Arithmetic Fundamentals--significant differences were found in three out of six possible cases.
   E. Arithmetic Problems--significant differences were found in four out of six possible cases.
   F. Combined Arithmetic--significant differences were found in five out of six possible cases.
   G. English--no significant differences were found in six possible cases.
   H. Spelling--significant differences were found in three out of six possible cases.
2. First Preferences and Combined First, Second, Third Preferences:
   A. First Preferences--significant differences were found in six out of twenty-four possible cases.
   B. Combined First, Second, Third Preferences--significant differences were found in fifteen out of twenty-four possible cases.

Summary: 1st Quartile Preferences vs. 4th Quartile Preferences

1. Subjects:

A. Reading Comprehension--significant differences were found in two out of six possible cases.

B. Reading Vocabulary--significant differences were found in two out of six possible cases.

C. Combined Reading--significant differences were found in two out of six possible cases.

D. Arithmetic Fundamentals--significant differences were found in three out of six possible cases.

E. Arithmetic Problems--significant differences were found in four out of six possible cases.

F. Combined Arithmetic--significant differences were found in five out of six possible cases.

G. English--no significant differences were found in six possible cases.

H. Spelling--significant differences were found in three out of six possible cases.

2. First Preferences and Combined First, Second, Third Preferences:

A. First Preferences--significant differences were found in six out of twenty-four possible cases.

B. Combined First, Second, Third Preferences--significant differences were found in fifteen out of twenty-four possible cases.

3. Boys, Girls, and Boys and Girls Combined:

A. Boys--significant differences were found in nine out of sixteen possible cases.

B. Girls--significant differences were found in two out of sixteen possible cases.

C. Boys and Girls Combined--significant differences were found in ten out of sixteen possible cases.

4. Total:

The foregoing organization of the analysis of the data established 48 separate comparisons. Out of this total of 48 critical ratios, significant differences have been found in 21 cases.

5. Summary:

The percentage of significant differences, for each set of comparisons, is as follows:

A. Subjects

Reading	33.33 %
Arithmetic	66.66 %
Language	00.00 %
Spelling	50.00 %

B. Preferences

First Preferences	25.00 %
Combined 1st,2nd,3rd Preferences	62.50 %

C. Sexes

Boys	56.25 %
Girls	12.50 %
Boys and Girls	62.50 %

D. Total

43.75 %

3. Boys, Girls, and Boys and Girls Combined:

A. Boys--significant differences were found in nine out of sixteen possible cases.

B. Girls--significant differences were found in two out of sixteen possible cases.

C. Boys and Girls Combined--significant differences were found in ten out of sixteen possible cases.

4. Total:

The foregoing organization of the analysis of the data established 48 separate comparisons. Out of this total of 48 critical ratios, significant differences have been found in 21 cases.

5. Summary:

The percentage of significant differences, for each set of comparisons, is as follows:

A. Subjects

Reading	33.33 %
Arithmetic	66.66 %
Language	00.00 %
Spelling	50.00 %

B. Preferences

First Preferences	25.00 %
Combined 1st,2nd,3rd Preferences	62.50 %

C. Boxes

Boys	58.25 %
Girls	12.50 %
Boys and Girls	62.50 %

D. Total

43.75 %

Educational Significance of Quartile Differences

Up to this point all inter-group comparisons, with respect to differences in preference percentages between achievement quartiles, have been based upon the statistical significance of the differences in those percentages. In other words, the sole consideration has been statistical and no attention has been paid to the educational significance of the differences found. It would seem only fair, then, to inquire into the educational significance of the statistical evidence summarized above. For this purpose Table 52 has been constructed. Only the differences which have been found to be significant are included, for it is these differences which have been used to evaluate the preferences of high achievers in comparison with the preferences of low achievers.

TABLE 52

EDUCATIONAL SIGNIFICANCE OF DIFFERENCES IN PERCENTAGES OF PREFERENCES

Test	Sex	Preference	Critical Ratio	Difference in Percentage
Reading Comprehension	Boys	1st,2nd,3rd	4.408	20.85
Reading Comprehension	Boys and Girls	1st,2nd,3rd	5.026	16.79
Reading Vocabulary	Boys	1st	2.812	8.79
Reading Vocabulary	Boys	1st,2nd,3rd	4.518	21.23

Educational Significance of Quartile Differences

Up to this point all inter-group comparisons, with respect to differences in preference percentages between achievement quartiles, have been based upon the statistical significance of the differences in those percentages. In other words, the sole consideration has been statistical and no attention has been paid to the educational significance of the differences found. It would seem only fair, then, to inquire into the educational significance of the statistical evidence summarized above. For this purpose Table 52 has been constructed. Only the differences which have been found to be significant are included, for it is these differences which have been used to evaluate the preferences of high achievers in comparison with the preferences of low achievers.

TABLE 52

EDUCATIONAL SIGNIFICANCE OF DIFFERENCES IN PERCENTAGES OF PREFERENCES

Test	Sex	Preference	Critical Ratio	Difference in Percentage
Reading Comprehension	Boys	1st,2nd,3rd	4.408	20.85
Reading Comprehension	Boys and Girls	1st,2nd,3rd	5.026	16.79
Reading Vocabulary	Boys	1st	2.812	8.79
Reading Vocabulary	Boys	1st,2nd,3rd	4.818	21.83

Table 52 (concluded)

Test	Sex	Preference	Critical Ratio	Difference in Percentage
Combined Reading	Boys	1st,2nd,3rd	5.093	23.59
Combined Reading	Boys and Girls	1st,2nd,3rd	6.264	20.80
Arithmetic Fund.	Boys	1st,2nd,3rd	4.398	20.75
Arithmetic Fund.	Boys and Girls	1st	4.469	11.80
Arithmetic Fund.	Boys and Girls	1st,2nd,3rd	6.608	21.94
Arithmetic Problems	Boys	1st,2nd,3rd	3.160	15.17
Arithmetic Problems	Girls	1st,2nd,3rd	3.260	15.65
Arithmetic Problems	Boys and Girls	1st	3.414	9.22
Arithmetic Problems	Boys and Girls	1st,2nd,3rd	5.169	17.49
Combined Arithmetic	Boys	1st	2.738	10.90
Combined Arithmetic	Boys	1st,2nd,3rd	3.561	17.06
Combined Arithmetic	Girls	1st,2nd,3rd	3.862	15.27
Combined Arithmetic	Boys and Girls	1st	4.129	11.15
Combined Arithmetic	Boys and Girls	1st,2nd,3rd	6.123	20.76
Spelling	Boys and Girls	1st	2.713	5.21
Spelling	Boys and Girls	1st,2nd,3rd	3.569	11.85
Spelling	Boys	1st,2nd,3rd	4.280	19.43

Table 82 (concluded)

Test	Sex	Preference	Critical Ratio	Difference in Percentage
Combined Reading	Boys	1st, 2nd, 3rd	5.092	35.59
Combined Reading	Boys and Girls	1st, 2nd, 3rd	6.264	20.80
Arithmetic Fund.	Boys	1st, 2nd, 3rd	4.238	20.76
Arithmetic Fund.	Boys and Girls	1st	4.469	11.80
Arithmetic Fund.	Boys and Girls	1st, 2nd, 3rd	6.008	21.84
Arithmetic Problems	Boys	1st, 2nd, 3rd	3.160	15.17
Arithmetic Problems	Girls	1st, 2nd, 3rd	3.260	15.88
Arithmetic Problems	Boys and Girls	1st	5.414	9.22
Arithmetic Problems	Boys and Girls	1st, 2nd, 3rd	6.169	17.49
Combined Arithmetic	Boys	1st	2.738	10.90
Combined Arithmetic	Boys	1st, 2nd, 3rd	3.651	17.06
Combined Arithmetic	Girls	1st, 2nd, 3rd	3.882	15.27
Combined Arithmetic	Boys and Girls	1st	4.129	11.16
Combined Arithmetic	Boys and Girls	1st, 2nd, 3rd	6.128	20.76
Spelling	Boys and Girls	1st	8.718	5.21
Spelling	Boys and Girls	1st, 2nd, 3rd	3.589	11.88
Spelling	Boys	1st, 2nd, 3rd	4.280	13.43

The table is read as follows: in reading comprehension a statistically significant critical ratio of 4.408 was found between the combined first, second, and third preferences for reading of the first achievement quartile and the fourth achievement quartile, boys. The actual difference between the two quartiles in percentage of preference for reading was 20.85 per cent.

Any decision as to the amount of difference in percentages of preferences between the comparative quartiles that is to be regarded as educationally significant must, of course, remain a matter of judgment. If the standard is set at 10 per cent, one child in ten, then eighteen of the twenty-one statistically significant differences will remain educationally significant. If, however, the standard is set at 20 per cent, one child in five--and this would seem to be high--then seven of the statistically significant differences will remain educationally significant. Even with this last high standard, most of the differences arrived at by purely statistical techniques are seen to carry implications for the classroom. In other words, in addition to the statistical differences found, provision should be made in appraising these results for consideration of underlying educational inferences.

The table is read as follows: in reading comprehension a statistically significant critical ratio of 4.408 was found between the combined first, second, and third preferences for reading of the first achievement quartile and the fourth achievement quartile, boys. The actual difference between the two quartiles in percentage of preference for reading was 20.85 per cent.

Any decision as to the amount of difference in percentages of preferences between the comparative quartiles that is to be regarded as educationally significant must, of course, remain a matter of judgment. If the standard is set at 10 per cent, one child in ten, then eighteen of the twenty-one statistically significant differences will remain educationally significant. If, however, the standard is set at 20 per cent, one child in five--and this would seem to be high--then seven of the statistically significant differences will remain educationally significant. Even with this last high standard, most of the differences arrived at by purely statistical techniques are seen to carry implications for the classroom. In other words, in addition to the statistical differences found, provision should be made in appraising these results for consideration of underlying educational inferences.

The Achievement of Preference Groups vs. the Achievement of Non-Preference Groups

The second major analysis of the data took the form of comparing the achievement of the preference groups with the achievement of the non-preference groups. This approach is in direct antithesis to the first major analysis, which took the form of ascertaining subject preferences as they occurred within achievement groups. The basis of organization for this second approach was the establishment of distributions of all preferences, on the basis of first preference on the one hand, and on the basis of combined first, second, and third preferences on the other hand. This was done, as before, for each subject test and subtest, and for boys, for girls, and for boys and girls combined. In each selected instance a distribution of achievement scores was made, but this achievement distribution was set up within the limits of each selected group. For example, all the boys who had made reading their first preference were drawn from the sample. A distribution of the achievement scores was made of this group of first-preference-for-reading boys. The comparative group, in each instance, was the remainder of the total sample left after the preference group had been withdrawn. In the case of the foregoing example, after the boys who had made reading a first preference had been withdrawn and an achievement distribution set up on that group, then a similar achievement distribution was

established for the remainder. In the foregoing example, this contrasting group included all the girls and all the remaining boys who had not selected reading as first preference. The technique used in analyzing and comparing these groups, in each instance, was the determination of the means and standard deviations of each comparative group. The formula of critical ratio was applied to the means of the groups to determine the degree of significance of the difference in means. This procedure was followed for first preferences contrasted with all the remainder; first, second, and third preferences combined, in contrast with all the remainder; in each subject area; and for boys, for girls, and for boys and girls combined. Thus the same basic analysis as used in the first part of the study was employed for the point of determining what significant differences might exist between the comparative groups, for each of the afore-mentioned categories, with preference being the controlled variable in this particular analysis.

In this manner a study was made of the comparison of the differences in achievement in various groups, as they were distributed on preference and non-preference factors.

TABLE 53

READING COMPREHENSION, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	199	648
Mean	62.60	58.92
S.D.	15.98	13.30
$S.E._M$	1.13	.52
Diff.	3.68	
$S.E._{Diff.}$	1.24	
C.R.	2.967	

The critical ratio of 2.967 shows a significant difference in favor of the preference group over the non-preference group.

TABLE 83

READING COMPREHENSION, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	199	648
Mean	82.60	68.92
S.D.	18.98	18.30
S.E. M	1.15	.82
Diff.	3.88	
S.E. Diff.	1.24	
C.R.	3.897	

The critical ratio of 3.897 shows a significant difference in favor of the preference group over the non-preference group.

TABLE 54

READING COMPREHENSION, GIRLS, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	210	637
Mean	58.61	59.11
S.D.	13.47	13.54
$S.E._M$	.93	.54
Diff.	.50	
$S.E._{Diff.}$	1.07	
C.R.	.467	

There is no significant difference between the preference group and the non-preference group; however, the slight actual difference is in favor of the non-preference group.

TABLE 64

READING COMPREHENSION, GIRLS, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	210	637
Mean	86.81	80.11
S.D.	13.47	15.84
S.E. $_M$	.93	.64
Diff.	.80	
S.E. Diff.	1.07	
C.R.	.467	

There is no significant difference between the preference group and the non-preference group; however, the slight actual difference is in favor of the non-preference group.

TABLE 55

READING COMPREHENSION, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	409	1285
Mean	60.55	59.02
S.D.	14.88	13.42
$S.E._M$	.74	.37
Diff.	1.53	
$S.E._{Diff.}$	.83	
C.R.	1.843	

There is no statistically significant difference between the two groups.

TABLE 55

READING COMPREHENSION, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	409	1288
Mean	80.85	59.02
S.D.	14.88	13.42
S.E. M	.74	.37

Diff.	1.53
S.E. Diff.	.83
C.R.	1.843

There is no statistically significant difference between the two groups.

TABLE 56

READING COMPREHENSION, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	445	402
Mean	62.18	57.13
S.D.	15.00	12.41
S.E. $_{M}$	.71	.61
Diff.	5.05	
S.E. $_{Diff.}$	.94	
C.R.	5.361	

The difference in mean scores indicates a statistically significant difference between the two groups, in favor of the preference group.

TABLE 86

READING COMPREHENSION, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	446	402
Mean	82.18	87.12
S.D.	15.00	12.41
S.E. M	.71	.61
Diff.	5.05	
S.E. Diff.	.94	
C.R.	5.391	

The difference in mean scores indicates a statistically significant difference between the two groups, in favor of the preference group.

TABLE 57

READING COMPREHENSION, GIRLS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	437	410
Mean	59.56	58.38
S.D.	13.72	13.29
$S.E._M$	.65	.65
Diff.	1.18	
$S.E._{Diff.}$	.91	
C.R.	1.285	

There is no statistically significant difference between the preference and the non-preference groups.

TABLE 57

READING COMPREHENSION, GIRLS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	457	410
Mean	30.56	28.38
S.D.	13.72	13.29
S.E. $_M$	.66	.65
DIFF.	1.18	
S.E. DIFF.	.91	
C.R.	1.298	

There is no statistically significant difference between the preference and the non-preference groups.

TABLE 58

READING COMPREHENSION, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	882	812
Mean	60.58	57.76
S.D.	14.44	12.88
$S.E._M$	.48	.45
Diff.	2.82	
$S.E._{Diff.}$	.66	
C.R.	4.272	

The critical ratio of 4.272 indicates a statistically significant difference in favor of the preference group.

TABLE 88

READING COMPREHENSION, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	882	312
Mean	60.38	37.78
S.D.	14.44	12.88
S.E. M	.48	.45
DIFF.	2.82	
S.E. DIFF.	.68	
C.R.	4.272	

The critical ratio of 4.272 indicates a statistically significant difference in favor of the preference group.

TABLE 59

READING VOCABULARY, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	199	648
Mean	63.90	60.32
S.D.	16.35	14.41
$S.E._M$	1.15	.56
Diff.	3.58	
$S.E._{Diff.}$	1.27	
C.R.	2.818	

The critical ratio of 2.818 shows a significant difference in favor of the preference group over the non-preference group.

TABLE 59

READING VOCABULARY, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	199	648
Mean	83.90	80.32
S.D.	16.35	14.41
S.E. M	1.16	.56
Diff.	3.58	
S.E. Diff.	1.27	
C.R.	2.818	

The critical ratio of 2.818 shows a significant difference in favor of the preference group over the non-preference group.

TABLE 60

READING VOCABULARY, GIRLS, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	210	637
Mean	58.40	58.76
S.D.	14.02	13.33
$S.E._M$	.96	.52
Diff.	.36	
$S.E._{Diff.}$	1.09	
C.R.	.330	

There is no statistically significant difference between the two groups, although the actual slight difference is in favor of the non-preference group.

TABLE 60

READING VOCABULARY, GIRLS, COMPARISON OF MEAN SCORES BETWEEN THE FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	210	637
Mean	58.60	56.76
S.D.	14.02	15.55
S.E. $_{M}$	.96	.62

Diff.	.36	
S.E. Diff.	1.09	
C.R.	.330	

There is no statistically significant difference between the two groups, although the actual slight difference is in favor of the non-preference group.

TABLE 61

READING VOCABULARY, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	409	1285
Mean	61.08	59.55
S.D.	15.45	13.91
$S.E._M$	.76	.38
Diff.	1.53	
$S.E._{Diff.}$	.85	
C.R.	1.800	

There is no significant difference between the preference and the non-preference group.

TABLE 62

READING VOCABULARY, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	445	402
Mean	63.60	58.48
S.D.	15.79	13.49
$S.E._M$	.74	.67
Diff.	5.12	
$S.E._{Diff.}$	.99	
C.R.	5.171	

The difference of 5.12 between the mean scores reveals a statistically significant difference in favor of the preference group.

TABLE 82

READING VOCABULARY, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	448	402
Mean	65.60	58.48
S.D.	15.79	15.49
S.E. M	.74	.07
Diff.	5.12	
S.E. Diff.	.99	
C.R.	5.171	

The difference of 5.12 between the mean scores reveals a statistically significant difference in favor of the preference group.

TABLE 63

READING VOCABULARY, GIRLS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	437	410
Mean	59.55	57.74
S.D.	14.45	12.36
$S.E._M$	.69	.61
Diff.	1.81	
$S.E._{Diff.}$	.92	
C.R.	1.967	

There is no statistically significant difference in the mean scores between the preference and the non-preference groups.

TABLE 85

READING VOCABULARY, GIRLS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	437	410
Mean	89.55	87.74
S.D.	14.45	12.56
S.E. $_{M}$	.69	.61
Diff.	1.81	
S.E. Diff.	.92	
C.R.	1.957	

There is no statistically significant difference in the mean scores between the preference and the non-preference groups.

TABLE 64

READING VOCABULARY, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	882	812
Mean	61.59	58.11
S.D.	15.28	12.93
$S.E._M$	.51	.45
Diff.	3.48	
$S.E._{Diff.}$	.68	
C.R.	5.117	

The difference in mean scores of 3.48 between the preference group and the non-preference group is found to be significant, in favor of the former.

TABLE 64

READING VOCABULARY, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	382	812
Mean	61.89	58.11
S.D.	13.89	12.98
S.E. M	.71	.46
Diff.	3.78	
S.E. Diff.	.89	
C.R.	3.117	

The difference in mean scores of 3.78 between the preference group and the non-preference group is found to be significant, in favor of the former.

TABLE 65

COMBINED READING, BOYS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	199	648
Mean	63.31	59.82
S.D.	15.32	12.93
$S.E._M$	1.08	.51
Diff.	3.49	
$S.E._{Diff.}$	1.19	
C.R.	2.932	

The critical ratio of 2.932 indicates a significant difference in favor of the preference group over the non-preference group.

TABLE 65

COMBINED READING, FOKS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	199	548
Mean	63.81	59.82
S.D.	16.38	12.93
S.E. M	1.08	.81
Diff.	3.49	
S.E. Diff.	1.19	
C.R.	2.932	

The critical ratio of 2.932 indicates a significant difference in favor of the preference group over the non-preference group.

TABLE 66

COMBINED READING, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	210	637
Mean	58.60	59.04
S.D.	13.00	12.69
S.E. M	.89	.51
Diff.	.44	
S.E. Diff.	1.05	
C.R.	.419	

Although there is no significant difference between the two groups, the slight actual difference is in favor of the non-preference group.

TABLE 66

COMBINED READING, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	210	657
Mean	58.60	59.04
S.D.	13.00	12.69
S.E. M	.89	.51
Diff.	.44	
S.E. Diff.	1.05	
C.R.	.419	

Although there is no significant difference between the two groups, the slight actual difference is in favor of the non-preference group.

TABLE 67

COMBINED READING, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	409	1285
Mean	60.89	59.44
S.D.	14.37	12.81
$S.E._M$	.71	.35
Diff.	1.45	
$S.E._{Diff.}$	.79	
C.R.	1.835	

There is no significant difference between the mean scores of the preference and the non-preference groups.

TABLE 87

COMBINED READING, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	409	1285
Mean	60.89	59.44
S.D.	14.37	12.81
S.E. M	.71	.35
Diff.	1.45	
S.E. Diff.	.79	
C.R.	1.833	

There is no significant difference between the mean scores of the preference and the non-preference groups.

TABLE 68

COMBINED READING, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	445	402
Mean	63.03	58.02
S.D.	14.34	12.09
$S.E._M$	.68	.59
Diff.	5.01	
$S.E._{Diff.}$	.90	
C.R.	5.566	

There is a statistically significant difference between the mean scores of the preference group and the non-preference group, in favor of the former.

TABLE 68

COMBINED READING, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	446	403
Mean	83.03	88.02
S.D.	14.34	12.03
S.E. $_M$	.68	.59
Diff.	5.01	
S.E. Diff.	.90	
C.R.	5.566	

There is a statistically significant difference between the mean scores of the preference group and the non-preference group, in favor of the former.

TABLE 69

COMBINED READING, GIRLS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	437	410
Mean	59.66	58.15
S.D.	13.32	12.10
$S.E._M$	.64	.59
Diff.	1.51	
$S.E._{Diff.}$	.87	
C.R.	1.735	

No significant difference is found between the preference and the non-preference groups.

TABLE 69

COMBINED READING, GIRLS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	437	410
Mean	59.86	58.15
S.D.	13.38	12.10
S.E. M	.64	.59
Diff.	1.71	
S.E. Diff.	.87	
C.R.	1.735	

No significant difference is found between the preference and the non-preference groups.

TABLE 70

COMBINED READING, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	882	812
Mean	61.36	58.09
S.D.	13.95	12.10
$S.E._M$	.47	.42
Diff.	3.27	
$S.E._{Diff.}$	.63	
C.R.	5.190	

The difference in mean scores of 3.27 is found to be statistically significant, in favor of the preference group.

TABLE 70

COMBINED READING, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	882	812
Mean	61.36	58.09
S.D.	13.86	12.10
S.E. M	.47	.42
Diff.	3.27	
S.E. Diff.	.65	
C.R.	5.190	

The difference in mean scores of 3.27 is found to be statistically significant, in favor of the preference group.

TABLE 71

ARITHMETIC FUNDAMENTALS, BOYS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	196	651
Mean	56.93	56.71
S.D.	7.21	7.53
$S.E._M$	.51	.29
Diff.	1.40	
$S.E._{Diff.}$	.58	
C.R.	2.413	

No significant difference is found between the preference and the non-preference groups.

TABLE 71

ARITHMETIC FUNDAMENTALS, BOYS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	196	631
Mean	66.99	56.71
S.D.	7.81	7.53
S.E. $_M$	.51	.29
Diff.	1.40	
S.E. Diff.	.59	
C.R.	2.413	

No significant difference is found between the preference and the non-preference groups.

TABLE 72

ARITHMETIC FUNDAMENTALS, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	161	686
Mean	57.01	55.32
S.D.	7.53	7.77
$S.E._M$	.59	.29
Diff.	1.69	
$S.E._{Diff.}$	.65	
C.R.	2.600	

The difference in mean scores of 1.69 is found to be statistically significant in favor of the preference group.

TABLE 72

ARITHMETIC FUNDAMENTALS, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	161	686
Mean	87.01	85.32
S.D.	7.85	7.77
S.E. M	.59	.29
Diff.	1.69	
S.E. Diff.	.65	
C.R.	2.600	

The difference in mean scores of 1.69 is found to be statistically significant in favor of the preference group.

TABLE 73

ARITHMETIC FUNDAMENTALS, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	357	1337
Mean	56.97	56.03
S.D.	7.35	7.65
$S.E._M$	.39	.21
Diff.	.94	
$S.E._{Diff.}$	.44	
C.R.	2.136	

The difference in mean scores of .94 is found not to be statistically significant.

TABLE 73

ARITHMETIC FUNDAMENTALS, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	357	1357
Mean	56.97	56.05
S.D.	7.59	7.85
S.E. $_M$	.39	.21
Diff.	.94	
S.E. Diff.	.44	
C.R.	2.136	

The difference in mean scores of .94 is found not to be statistically significant.

TABLE 74

ARITHMETIC FUNDAMENTALS, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	57.01	54.57
S.D.	7.48	7.26
$S.E._M$	.35	.36
Diff.	2.44	
$S.E._{Diff.}$	.50	
C.R.	4.880	

A statistically significant difference is found between the preference and the non-preference groups, in favor of the former.

TABLE 74

ARITHMETIC FUNDAMENTALS, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	405
Mean	87.01	84.57
S.D.	7.48	7.26
S.E. $_M$	.35	.36
Diff.	2.44	
S.E. Diff.	.50	
C.R.	4.880	

A statistically significant difference is found between the preference and the non-preference groups, in favor of the former.

TABLE 75

ARITHMETIC FUNDAMENTALS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	56.64	54.55
S.D.	8.11	7.18
$S.E._M$	.38	.36
Diff.	2.09	
$S.E._{Diff.}$	.52	
C.R.	4.019	

The critical ratio of 4.019 reveals a significant difference in favor of the preference group.

TABLE V5

ARITHMETIC FUNDAMENTALS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	56.64	64.55
S.D.	8.11	7.18
S.E. $_M$	.38	.36
Diff.	2.09	
S.E. Diff.	.52	
C.R.	4.019	

The critical ratio of 4.019 reveals a significant difference in favor of the preference group.

TABLE 76

ARITHMETIC FUNDAMENTALS, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	888	806
Mean	56.83	54.56
S.D.	7.80	7.22
$S.E._M$	.26	.25
Diff.	2.27	
$S.E._{Diff.}$	.36	
C.R.	6.305	

A significant difference is found between the preference group and the non-preference group, in favor of the former.

TABLE 76

ARITHMETIC FUNDAMENTALS, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	888	806
Mean	88.83	84.86
S.D.	7.80	7.22
S.E. $_M$	.26	.25
Diff.	2.27	
S.E. Diff.	.36	
C.R.	6.305	

A significant difference is found between the preference group and the non-preference group, in favor of the former.

TABLE 77

ARITHMETIC PROBLEMS, BOYS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	196	651
Mean	59.36	57.17
S.D.	11.69	10.45
$S.E._M$	.83	.41
Diff.	2.19	
$S.E._{Diff.}$	.92	
C.R.	2.380	

The difference in mean scores of 2.19 is found to be not statistically significant.

TABLE 77

ARITHMETIC PROBLEMS, BOYS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	196	851
Mean	39.36	37.17
S.D.	11.89	10.46
S.E. $_{M}$	.88	.41
Diff.	2.19	
S.E. Diff.	.92	
C.R.	2.380	

The difference in mean scores of 2.19 is found to be not statistically significant.

TABLE 78

ARITHMETIC PROBLEMS, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	161	686
Mean	57.06	55.32
S.D.	9.16	9.67
$S.E._M$	.72	.37
Diff.	1.74	
$S.E._{Diff.}$	.81	
C.R.	2.148	

The difference in mean scores of 1.74 is found to be not statistically significant.

TABLE 78

ARITHMETIC PROBLEMS, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	161	686
Mean	57.06	55.32
S.D.	9.16	9.67
$S.E._M$	.72	.37
Diff.	1.74	
$S.E._{Diff.}$	.81	
C.R.	2.148	

The difference in mean scores of 1.74 is found to be not statistically significant.

TABLE 79

ARITHMETIC PROBLEMS, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	357	1337
Mean	58.32	56.22
S.D.	10.68	10.10
S.E. $_{M}$	.56	.27
Diff.	2.10	
S.E. $_{Diff.}$	.62	
C.R.	3.387	

A significant difference is found between the preference group and the non-preference group, in favor of the former.

TABLE 80

ARITHMETIC PROBLEMS, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	58.99	56.22
S.D.	11.47	9.78
$S.E._M$	.54	.49
Diff.	2.77	
$S.E._{Diff.}$	.73	
C.R.	3.794	

The difference in mean scores of 2.77 is found to be statistically significant in favor of the preference group.

TABLE 80

ARITHMETIC PROBLEMS, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	405
Mean	56.99	54.22
S.D.	11.47	9.78
S.E. M	.54	.49
DIFF.		2.77
S.E. DIFF.		.73
C.R.		3.794

The difference in mean scores of 2.77 is found to be statistically significant in favor of the preference group.

TABLE 81

ARITHMETIC PROBLEMS, GIRLS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	56.80	54.39
S.D.	9.55	9.48
$S.E._M$	.45	.47
Diff.	2.41	
$S.E._{Diff.}$	.65	
C.R.	3.707	

The critical ratio of 3.707 indicates a significant difference in favor of the preference group.

TABLE 81

ARITHMETIC PROBLEMS, GIRLS, COMPARISON OF MEAN SCORES
BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP
AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	86.80	84.39
S.D.	8.85	9.48
S.E. M	.45	.47
Diff.	2.41	
S.E. Diff.	.65	
C.R.	3.707	

The critical ratio of 3.707 indicates a significant difference in favor of the preference group.

TABLE 82

ARITHMETIC PROBLEMS, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	888	806
Mean	57.90	55.31
S.D.	10.61	9.68
$S.E._M$	.35	.34
Diff.	2.59	
$S.E._{Diff.}$	.48	
C.R.	5.395	

A statistically significant difference is found between the preference group and the non-preference group, in favor of the former.

TABLE 82

ARITHMETIC PROBLEMS, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	388	806
Mean	87.90	83.31
S.D.	10.61	9.68
S.E. M	.75	.34
Diff.	3.59	
S.E. Diff.	.48	
C.R.	5.395	

A statistically significant difference is found between the preference group and the non-preference group, in favor of the former.

TABLE 83

COMBINED ARITHMETIC, BOYS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	196	651
Mean	58.35	56.50
S.D.	8.79	8.38
$S.E._M$	.63	.33
Diff.	1.85	
$S.E._{Diff.}$	.71	
C.R.	2.605	

The difference in mean scores of 1.85 is found to be statistically significant in favor of the preference group.

TABLE 84

COMBINED ARITHMETIC, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	161	686
Mean	57.24	55.44
S.D.	7.56	8.05
$S.E._M$	.59	.31
Diff.	1.80	
$S.E._{Diff.}$	.66	
C.R.	2.727	

The difference in mean scores of 1.80 is found to be statistically significant, in favor of the preference group.

TABLE 84

COMBINED ARITHMETIC, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	161	688
Mean	57.24	55.44
S.D.	7.56	8.05
S.E. M	.59	.31

Diff.	1.80
S.E. Diff.	.68
C.R.	2.727

The difference in mean scores of 1.80 is found to be statistically significant, in favor of the preference group.

TABLE 85

COMBINED ARITHMETIC, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	357	1337
Mean	57.85	55.96
S.D.	8.28	8.23
$S.E._M$	.43	.23
Diff.	1.89	
$S.E._{Diff.}$	.48	
C.R.	3.937	

The difference in mean scores of 1.89 is found to be statistically significant, in favor of the preference group.

TABLE 85

COMBINED ARITHMETIC, BOYS AND GIRLS COMBINED. COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	387	1337
Mean	87.85	86.06
S.D.	8.28	8.23
S.E. M	.43	.23
Diff.	1.80	
S.E. Diff.	.48	
C.R.	3.937	

The difference in mean scores of 1.80 is found to be statistically significant, in favor of the preference group.

TABLE 86

COMBINED ARITHMETIC, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	58.16	55.57
S.D.	8.92	7.82
$S.E._M$	.42	.39
Diff.	2.59	
$S.E._{Diff.}$	.57	
C.R.	4.543	

The difference in mean scores of 2.59 is found to be statistically significant, in favor of the preference group.

TABLE 86

COMBINED ARITHMETIC, BOYS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	86.16	85.87
S.D.	8.92	7.82
S.E. $_M$	.42	.39
Diff.	2.30	
S.E. Diff.	.57	
C.R.	4.043	

The difference in mean scores of 2.30 is found to be statistically significant, in favor of the preference group.

TABLE 87

COMBINED ARITHMETIC, GIRLS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	56.87	54.58
S.D.	8.08	7.17
$S.E._M$	.38	.35
Diff.	2.29	
$S.E._{Diff.}$	.51	
C.R.	4.490	

The difference in mean scores of 2.29 is found to be statistically significant, in favor of the preference group.

TABLE 87

COMBINED ARITHMETIC, CIRCLE, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	56.87	54.58
S.D.	8.08	7.17
S.E. $_M$	.38	.35
Diff.	2.29	
S.E. Diff.	.81	
C.R.	4.430	

The difference in mean scores of 2.29 is found to be statistically significant, in favor of the preference group.

TABLE 88

COMBINED ARITHMETIC, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	888	806
Mean	57.52	55.08
S.D.	8.53	7.78
$S.E._M$	.28	.27
Diff.	2.44	
$S.E._{Diff.}$	.39	
C.R.	6.256	

The difference in mean scores of 2.44 is found to be statistically significant, in favor of the preference group.

TABLE 87

COMBINED ARITHMETIC, GIRLS, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	444	403
Mean	56.87	54.58
S.D.	8.08	7.17
S.E.$_M$	.38	.35
Diff.	2.29	
S.E. Diff.	.81	
C.R.	4.430	

The difference in mean scores of 2.29 is found to be statistically significant, in favor of the preference group.

TABLE 88

COMBINED ARITHMETIC, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	888	806
Mean	57.52	55.08
S.D.	8.53	7.78
$S.E._M$	.28	.27
Diff.	2.44	
$S.E._{Diff.}$	.39	
C.R.	6.256	

The difference in mean scores of 2.44 is found to be statistically significant, in favor of the preference group.

TABLE 88

COMBINED ARITHMETIC, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN THE COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	838	806
Mean	87.32	83.09
S.D.	8.85	7.78
S.E. M	.29	.27
Diff.	4.44	
S.E. Diff.	.39	
C.R.	6.856	

The difference in mean scores of 2.44 is found to be statistically significant, in favor of the preference group.

TABLE 89

LANGUAGE, BOYS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	4	843
Mean	58.25	58.69
S.D.	15.80	13.41
$S.E._M$	7.90	.46
Diff.	.44	
$S.E._{Diff.}$	7.95	
C.R.	.055	

No significant difference is found between the preference group and the non-preference group, although the actual small difference is in favor of the non-preference group.

TABLE 89

LANGUAGE, BOYS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	4	843
Mean	56.25	56.69
S.D.	16.80	19.41
S.E. M	7.90	.46
Diff.	.44	
S.E. Diff.	7.95	
C.R.	.056	

No significant difference is found between the preference group and the non-preference group, although the actual small difference is in favor of the non-preference group.

TABLE 90

LANGUAGE, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	7	840
Mean	62.86	61.69
S.D.	12.62	14.75
S.E. M	4.78	.51
Diff.	1.17	
S.E. Diff.	4.81	
C.R.	.243	

No significant difference is found between the preference group and the non-preference group.

TABLE 90

LANGUAGE, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	7	840
Mean	62.86	81.30
S.D.	12.62	14.75
S.E. M	4.78	.51
Diff.	1.17	
S.E. Diff.	4.81	
C.R.	.243	

No significant difference is found between the preference group and the non-preference group.

TABLE 91

LANGUAGE, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	11	1683
Mean	61.18	60.18
S.D.	14.03	14.17
S.E. $_{M}$	4.23	.34
Diff.	1.00	
S.E. $_{Diff.}$	4.24	
C.R.	.235	

No significant difference is found between the preference group and the non-preference group.

TABLE 91

LANGUAGES, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	11	1883
Mean	81.18	80.18
S.D.	14.03	14.17
S.E. $_M$	4.23	.34
Diff.	1.00	
S.E. Diff.	4.24	
C.R.	.235	

No significant difference is found between the preference group and the non-preference group.

TABLE 92

LANGUAGE, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	38	809
Mean	59.82	58.63
S.D.	13.87	13.40
$S.E._M$	2.25	.47
Diff.	1.19	
$S.E._{Diff.}$	2.29	
C.R.	.519	

No significant difference is found between the preference group and the non-preference group.

TABLE 93

LANGUAGE, GIRLS, COMPARISON OF MEAN SCORES ATTAINED COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	82	796
Mean	82.44	61.65
S.D.	14.77	14.73
S.E. M	2.04	.52
Diff.	.79	
S.E. Diff.	2.16	
C.R.	.367	

No significant difference is found between the preference group and the non-preference group.

TABLE 94

LANGUAGE, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORE BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	90	1604
Mean	61.33	60.13
S.D.	14.46	14.15
$S.E._M$	1.52	.35
Diff.	1.20	
$S.E._{Diff.}$	1.56	
C.R.	.769	

No significant difference is found between the preference group and the non-preference group.

TABLE 94

LANGUAGE, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORE BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	90	1804
Mean	61.53	50.13
S.D.	14.44	14.15
S.E. M	1.52	.33
Diff.	1.40	
S.E. Diff.	1.56	
C.R.	.752	

No significant difference is found between the preference group and the non-preference group.

TABLE 95

SPELLING, BOYS, COMPARISON OF MEAN SCORE BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	57	790
Mean	59.75	55.91
S.D.	10.48	11.11
$S.E._M$	1.38	.39
Diff.	3.84	
$S.E._{Diff.}$	1.43	
C.R.	2.685	

The difference in mean scores is found to be statistically significant, in favor of the preference group.

TABLE 95

SPELLING, BOYS, COMPARISON OF MEAN SCORE BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	67	790
Mean	89.75	83.91
S.D.	10.48	11.11
S.E. M	1.28	.39
DIFF.	5.84	
S.E. DIFF.	1.45	
C.R.	2.685	

The difference in mean scores is found to be statistically significant, in favor of the preference group.

TABLE 96

SPELLING, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	102	745
Mean	59.25	58.10
S.D.	11.11	10.93
$S.E._M$	1.10	.40
Diff.	1.15	
$S.E._{Diff.}$	1.17	
C.R.	.982	

The difference in mean scores of 1.15 is found not to be statistically significant.

TABLE 96

SPELLING, GIRLS, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	102	745
Mean	59.85	58.10
S.D.	11.11	10.83
S.E. $_M$	1.10	.40
Diff.	1.75	
S.E. $_{Diff.}$	1.17	
C.R.	1.50	

The difference in mean scores of 1.75 is found not to be statistically significant.

TABLE 97

SPELLING, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	159	1535
Mean	59.43	56.97
S.D.	10.89	11.07
S.E. $_{M}$	.86	.28
Diff.	2.46	
S.E. $_{Diff.}$	.90	
C.R.	2.733	

The difference in mean scores is found to be statistically significant, in favor of the preference group.

TABLE 87

SPELLING, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN FIRST PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	159	1338
Mean	89.45	86.37
S.D.	10.89	11.07
S.E. M	.86	.28
Diff.	3.46	
S.E. Diff.	.90	
C.R.	2.732	

The difference in mean scores is found to be statistically significant, in favor of the preference group.

TABLE 98

SPELLING, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	295	552
Mean	57.90	55.24
S.D.	10.76	11.18
$S.E._M$	.62	.47
Diff.	2.66	
$S.E._{Diff.}$	.77	
C.R.	3.454	

The difference in mean scores of 2.66 is found to be statistically significant, in favor of the preference group.

TABLE 98

SPELLING, BOYS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	295	882
Mean	87.90	85.24
S.D.	10.76	11.18
S.E. M	.62	.47
Diff.	2.66	
S.E. Diff.	.77	
C.R.	3.454	

The difference in mean scores of 2.66 is found to be statistically significant, in favor of the preference group.

TABLE 99

SPELLING, GIRLS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	379	468
Mean	58.20	58.27
S.D.	10.97	10.94
$S.E._M$	.56	.51
Diff.	.07	
$S.E._{Diff.}$	.75	
C.R.	.093	

No significant difference is found between the preference group and the non-preference group, although the actual small difference is in favor of the non-preference group.

TABLE 99

SPELLING, GIRLS, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	379	458
Mean	58.20	58.27
S.D.	10.87	10.94
S.E. M	.56	.51
Diff.	.07	
S.E. Diff.	.75	
C.R.	.093	

No significant difference is found between the preference group and the non-preference group, although the actual small difference is in favor of the non-preference group.

TABLE 100

SPELLING, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	674	1020
Mean	58.07	56.63
S.D.	10.88	11.17
$S.E._M$	.42	.35
Diff.	1.44	
$S.E._{Diff.}$	.54	
C.R.	2.666	

The difference in mean scores of 1.44 is found to be statistically significant, in favor of the preference group.

TABLE 100

SPELLING, BOYS AND GIRLS COMBINED, COMPARISON OF MEAN SCORES BETWEEN COMBINED FIRST, SECOND, THIRD PREFERENCE GROUP AND THE REMAINDER OF THE SAMPLE

Statistic	Preference	Remainder
N	874	1020
Mean	58.07	56.63
S.D.	10.88	11.17
S.E. M	.42	.35
Diff.	1.44	
S.E. Diff.	.54	
C.R.	2.666	

The difference in mean scores of 1.44 is found to be statistically significant, in favor of the preference group.

TABLE 101

SUMMARY OF CRITICAL RATIOS: COMPARISONS OF MEAN ACHIEVEMENT SCORES, BETWEEN PREFERENCE GROUPS AND NON-PREFERENCE GROUPS: BOYS, GIRLS, AND BOYS AND GIRLS COMBINED; FIRST PREFERENCES, AND FIRST, SECOND, AND THIRD PREFERENCES COMBINED

Test	Preference	Boys	Girls	Boys and Girls
Reading Comprehension	First	2.967	.467	1.843
Reading Comprehension	Combined	5.361	1.285	4.272
Reading Vocabulary	First	2.818	.330	1.800
Reading Vocabulary	Combined	5.171	1.967	5.117
Combined Reading	First	2.932	.419	1.835
Combined Reading	Combined	5.566	1.735	5.190
Arithmetic Fundamentals	First	2.413	2.600	2.136
Arithmetic Fundamentals	Combined	4.880	4.019	6.305
Arithmetic Problems	First	2.380	2.148	3.387
Arithmetic Problems	Combined	3.794	3.707	5.395
Combined Arithmetic	First	2.605	2.727	3.937
Combined Arithmetic	Combined	4.543	4.490	6.256
English	First	.055	.243	.235
English	Combined	.519	.367	.769
Spelling	First	2.685	.982	2.733
Spelling	Combined	3.454	.093	2.666

TABLE 101

SUMMARY OF CRITICAL RATIOS; COMPARISONS OF MEAN ACHIEVEMENT SCORES, BETWEEN
PREFERENCE GROUPS AND NON-PREFERENCE GROUPS; BOYS, GIRLS, AND BOYS AND
GIRLS COMBINED; FIRST ENDEAVORS, AND FIRST, SECOND, AND THIRD
PERFORMANCES COMBINED

Test	Preference	Boys	Girls	Boys and Girls
Reading Comprehension	First	2.967	.467	1.843
Reading Comprehension	Combined	1.281	1.283	4.252
Reading Vocabulary	First	2.178	.230	1.800
Reading Vocabulary	Combined	1.171	1.887	2.117
Combined Reading	First	2.982	.419	1.822
Combined Reading	Combined	2.288	1.758	2.880
Arithmetic Fundamentals	First	2.478	2.000	2.308
Arithmetic Fundamentals	Combined	4.080	4.078	6.208
Arithmetic Problems	First	2.280	2.142	2.287
Arithmetic Problems	Combined	2.704	2.707	2.282
Combined Arithmetic	First	2.603	2.727	2.927
Combined Arithmetic	Combined	4.240	4.490	6.258
Partial Correlation	First	.048	.245	.258
Partial Correlation	Combined	.678	.567	.766
Spelling	First	2.885	.908	2.753
Spelling	Combined	3.484	.095	3.285

Summary: Achievement of Preference Groups vs. Achievement of Non-Preference Groups

1. Subjects:
   A. Reading Comprehension--significant differences were found in three out of six possible cases.
   B. Reading Vocabulary--significant differences were found in three out of six possible cases.
   C. Combined Reading--significant differences were found in three out of six possible cases.
   D. Arithmetic Fundamentals--significant differences were found in four out of six possible cases.
   E. Arithmetic Problems--significant differences were found in four out of six possible cases.
   F. Combined Arithmetic--significant differences were found in six out of six possible cases.
   G. English--no significant differences were found in six possible cases.
   H. Spelling--significant differences were found in four of six possible cases.
2. First Preferences and Combined First, Second, Third Preferences:
   A. First Preferences--significant differences were found in ten out of twenty-four possible cases.
   B. Combined First, Second, Third Preferences--significant differences were found in seventeen out of twenty-four

possible cases.

3. Boys, Girls, and Boys and Girls Combined:

A. Boys--significant differences were found in twelve out of sixteen possible cases.

B. Girls--significant differences were found in five out of sixteen possible cases.

C. Boys and Girls Combined--significant differences were found in ten out of sixteen possible cases.

4. Total:

The foregoing organization of the analysis of the data established 48 separate comparisons. Out of this total of 48 critical ratios, significant differences have been found in 27 cases.

5. Summary:

The percentage of significant differences, for each set of comparisons, is as follows:

A. Subjects

Reading	50.00 %
Arithmetic	77.77 %
Language	00.00 %
Spelling	66.66 %

B. Preferences

First Preferences	41.66 %
Combined 1st, 2nd, 3rd Preferences	70.81 %

C. Sexes

Boys	75.00 %
Girls	31.25 %
Boys and Girls	62.50 %

D. Total

56.25 %

Educational Significance of Preference Differences

As was the case in the first analysis, all inter-group comparisons, with respect to differences in mean scores between preference and non-preference groups, have been based upon the statistical significance of the differences in those mean scores. Again, the sole consideration has been statistical, and no attention has been paid to the educational significance of the differences found. It would seem advisable once more to inquire into the educational significance of the statistical evidence which has been summarized in the foregoing section. For this purpose Table 102 has been constructed. Only the differences in mean scores, between the preference and the non-preference groups, which have been found to be significant, are included, for it is these differences which have been used to compare the achievement of preference groups with the achievement of non-preference groups.

TABLE 102

EDUCATIONAL SIGNIFICANCE OF DIFFERENCES IN MEAN SCORES

Test	Sex	Preference	Critical Ratio	Difference in Means
Reading Comprehension	Boys	1st	2.967	3.68
Reading Comprehension	Boys	1st,2nd,3rd	5.361	5.05
Reading Comprehension	Boys and Girls	1st,2nd,3rd	4.272	2.82
Reading Vocabulary	Boys	1st	2.818	3.58
Reading Vocabulary	Boys	1st,2nd,3rd	5.171	5.12
Reading Vocabulary	Boys and Girls	1st,2nd,3rd	5.117	3.48
Combined Reading	Boys	1st	2.932	3.49
Combined Reading	Boys	1st,2nd,3rd	5.566	5.01
Combined Reading	Boys and Girls	1st,2nd,3rd	5.190	3.27
Arithmetic Fundamentals	Boys	1st,2nd,3rd	4.880	2.44
Arithmetic Fundamentals	Girls	1st	2.600	1.69
Arithmetic Fundamentals	Girls	1st,2nd,3rd	4.019	2.09
Arithmetic Fundamentals	Boys and Girls	1st,2nd,3rd	6.305	2.27
Arithmetic Problems	Boys	1st,2nd,3rd	3.794	2.77
Arithmetic Problems	Girls	1st,2nd,3rd	3.707	2.41
Arithmetic Problems	Boys and Girls	1st	3.387	2.10
Arithmetic Problems	Boys and Girls	1st,2nd,3rd	5.395	2.59
Combined Arithmetic	Boys	1st	2.605	1.85
Combined Arithmetic	Boys	1st,2nd,3rd	4.543	2.59
Combined Arithmetic	Girls	1st	2.727	1.80
Combined Arithmetic	Girls	1st,2nd,3rd	4.490	2.29
Combined Arithmetic	Boys and Girls	1st	3.937	1.89
Combined Arithmetic	Boys and Girls	1st,2nd,3rd	6.256	2.44
Spelling	Boys	1st	2.685	3.84
Spelling	Boys	1st,2nd,3rd	3.454	2.66
Spelling	Boys and Girls	1st	2.733	2.46
Spelling	Boys and Girls	1st,2nd,3rd	2.666	1.44

TABLE 105

EDUCATIONAL SIGNIFICANCE OF DIFFERENCES IN MEAN SCORES

Test	Sex	Preference	Critical Ratio	Difference in Means
Reading Comprehension	Boys	1st	2.987	3.88
Reading Comprehension	Boys	1st, 2nd, 3rd	5.361	6.05
Reading Comprehension	Boys and Girls	1st, 2nd, 3rd	4.272	2.82
Reading Vocabulary	Boys	1st	2.818	3.58
Reading Vocabulary	Boys	1st, 2nd, 3rd	5.172	6.12
Reading Vocabulary	Boys and Girls	1st, 2nd, 3rd	3.117	3.48
Combined Reading	Boys	1st	2.982	3.48
Combined Reading	Boys	1st, 2nd, 3rd	5.886	6.01
Combined Reading	Boys and Girls	1st, 2nd, 3rd	3.190	3.27
Arithmetic Fundamentals	Boys	1st, 2nd, 3rd	4.880	2.44
Arithmetic Fundamentals	Girls	1st	2.600	1.69
Arithmetic Fundamentals	Girls	1st, 2nd, 3rd	4.019	2.09
Arithmetic Fundamentals	Boys and Girls	1st, 2nd, 3rd	3.305	2.27
Arithmetic Problems	Boys	1st, 2nd, 3rd	3.794	2.77
Arithmetic Problems	Girls	1st, 2nd, 3rd	3.707	2.41
Arithmetic Problems	Boys and Girls	1st	3.387	2.10
Arithmetic Problems	Boys and Girls	1st, 2nd, 3rd	3.395	2.89
Combined Arithmetic	Boys	1st	2.605	1.88
Combined Arithmetic	Boys	1st, 2nd, 3rd	4.862	2.89
Combined Arithmetic	Girls	1st	2.727	1.80
Combined Arithmetic	Girls	1st, 2nd, 3rd	4.490	2.89
Combined Arithmetic	Boys and Girls	1st	3.937	1.89
Combined Arithmetic	Boys and Girls	1st, 2nd, 3rd	3.256	2.44
Spelling	Boys	1st	2.838	3.04
Spelling	Boys	1st, 2nd, 3rd	5.454	5.86
Spelling	Boys and Girls	1st	2.732	2.46
Spelling	Boys and Girls	1st, 2nd, 3rd	3.686	1.44

The table is read as follows: in reading comprehension, a statistically significant critical ratio of 2.967 was found between mean score of the first preference group and the mean score of the remainder, boys. The actual difference in mean scores was 3.68. It must be kept in mind that all achievement scores are in terms of grade equivalents, which means there was an actual achievement difference of 3.68 months between the means of the preference and the non-preference group.

Any decision as to the amount of difference in mean scores, between the preference and the non-preference groups, that is to be regarded as educationally significant, must, of course, remain a matter of judgment. If the standard is set at 2.0 months--one fifth of a school year--then twenty-two of the twenty-seven statistically significant differences will remain educationally significant. If the standard is set at 2.5, however--one quarter of a school year--then fourteen of the statistically significant differences will remain educationally significant. If the standard should be set at 3.0, then nine of the statistically significant differences will remain educationally significant. In other words, again, in addition to the statistical differences found, provision should be made for appraising these results in terms of implications for the classroom.

The table is read as follows: in reading comprehension, a statistically significant critical ratio of 2.867 was found between mean score of the first preference group and the mean score of the remainder, boys. The actual difference in mean scores was 3.63. It must be kept in mind that all achievement scores are in terms of grade equivalents, which means there was an actual achievement difference of 3.63 months between the means of the preference and the non-preference group.

Any decision as to the amount of difference in mean scores, between the preference and the non-preference groups, that is to be regarded as educationally significant, must of course, remain a matter of judgment. If the standard is set at 2.0 months--one fifth of a school year--then twenty-two of the twenty-seven statistically significant differences will remain educationally significant. If the standard is set at 3.0, however--one quarter of a school year--then fourteen of the statistically significant differences will remain educationally significant. If the standard should be set at 3.0, then nine of the statistically significant differences will remain educationally significant. In other words, again, in addition to the statistical differences found, provision should be made for appraising these results in terms of implications for the classroom.

Representativeness of the Sample

A third analysis of the data has been made for the purpose of ascertaining the degree of representativeness of the sample, selected for this study, in terms of comparison with the original study from which the sample was drawn. As has been indicated previously, the initial investigation into the subject preferences of this group of fifth grade New England children was conducted by Blanchard.[3] This first study encompassed 13,483 children. The sample used, however, in this particular investigation, when refined and equated, embodied 1694 children. In the interests of determining a reliable basis of comparison between the two groups, it became obviously necessary to apply some test of significance between the two. The question was to determine to what degree the sample paralleled the population, in terms of the frequencies of subject preferences.

In order to do this, comparisons of the percentages of subject preferences were made between the two groups, the population and the sample, for each of the subject areas, and for boys, for girls, and for boys and girls combined. The Blanchard study revealed the actual percentages of choices in each of these areas. Accordingly, the actual percentages

---

[3]Helen C. Blanchard, "Subject Preferences in the Fifth Grade," Unpublished Master's thesis (Boston: Boston University, 1948).

of choices in each of these same areas were computed for the sample. Tables showing the comparative percentages have been constructed and a test of significance of the differences, through the application of the critical ratio formula, has again been applied. In this way it has been possible to determine the representativeness of the sample study to the original Blanchard population. The full tables from the Blanchard study may be found in Appendix B. The tables, showing the comparative percentages between the two studies, follow.

of choices in each of these same areas were computed for the sample. Tables showing the comparative percentages have been constructed and a test of significance of the differences, through the application of the critical ratio formula, has again been applied. In this way it has been possible to determine the representativeness of the sample study to the original Blanchard population. The full tables from the Blanchard study may be found in Appendix B. The tables, showing the comparative percentages between the two studies, follow.

TABLE 103

COMPARISON OF ORIGINAL POPULATION WITH THE SAMPLE STUDY, PERCENTAGES OF PREFERENCES FOR READING

	First Preferences			Combined 1,2,3 Preferences		
	Boys	Girls	Boys and Girls	Boys	Girls	Boys and Girls
Original Population--P_1 (13483)	22.05	23.37	22.70	17.50	18.01	17.74
Sample Study--P_2 (1694)	23.49	24.79	24.14	17.51	17.17	17.35
Difference $P_1 - P_2$	1.44	1.42	1.44	.01	.84	.39
S.E. P_1	.30	.30	.30	.20	.20	.20
S.E. P_2	1.00	1.00	1.00	.90	.90	.90
S.E. Diff.	1.04	1.04	1.04	.92	.92	.92
Critical Ratio	1.384	1.365	1.384	.010	.913	.423

ДУБЛЕ 102

СОМПАРАЦИЈА ОД ОКОЛУ ЈЕДНОГ ПОЛОВИНА ЦЕНТИМА ЗА ВЕЛИКА ЗЕМЉИШТА

ИНТЕРВЈУИСАЊЕ ЗА ЖЕНЕ

	Чиста средња вредност	Стандардна девијација	Стандардна грешка	Комплетно искључивање		Парно искључивање		Средња вредност разлике	Стандардна девијација разлике	Стандардна грешка разлике	95% интервал поверења за разлику	
				Корелација	Значајност	Корелација	Значајност				Доња граница	Горња граница
Пар 1												
Број деце	1.884	1.1884	.0184	.1884	.000	.1884	.000	.1884	1.1884	.0184	.1884	.2284
Број деце	1.884	1.1884	.0184									
Пар 2												
Број деце	1.884	1.1884	.0184	.1884	.000	.1884	.000	.1884	1.1884	.0184	.1884	.2284
Број деце	1.884	1.1884	.0184									
Пар 3												
Број деце	1.884	1.1884	.0184	.1884	.000	.1884	.000	.1884	1.1884	.0184	.1884	.2284
Број деце	1.884	1.1884	.0184									

TABLE 104

COMPARISON OF ORIGINAL POPULATION WITH THE SAMPLE STUDY, PERCENTAGES OF PREFERENCES FOR ARITHMETIC

	First Preferences			Combined 1,2,3 Preferences		
	Boys	Girls	Boys and Girls	Boys	Girls	Boys and Girls
Original Population--P_1 (13483)	23.04	21.39	22.24	16.88	16.20	16.84
Sample Study--P_2 (1694)	23.14	19.00	21.36	17.47	17.47	17.73
Difference $P_1 - P_2$	.10	2.39	.88	.59	1.27	.89
S.E. P_1	.30	.30	.30	.20	.20	.20
S.E. P_2	1.00	1.00	1.00	.90	.90	.90
S.E. Diff.	1.04	1.04	1.04	.92	.92	.92
Critical Ratio	.096	2.291	.846	.641	1.384	.967

TABLE 104

COMPARISON OF ORIGINAL POPULATION WITH THEE SAMPLE STUDY, PERCENTAGES OF PUPULATIONS FOR ARIZONETO

	Mixed Pedigrees			Combined I.S.S Pedigrees		
	Boys	Girls	Boys and Girls	Boys	Girls	Boys and Girls
Original population--f_1 (1935)	23.04	21.30	22.34	10.68	10.80	10.64
Sample study--P_s (1934)	23.14	19.00	21.50	17.48	17.47	17.75
Differences $f_1 - P_s$	.10	2.30	.84	6.80	7.27	6.89
$\frac{f_1}{P_s}$	.996	1.12	1.04	.61	.59	.60
$\frac{P_s}{f_1}$	1.00	.889	.961	1.64	1.69	1.66
Critical Ratio Diff. / $\sigma_{diff.}$	.097	2.557	1.384	1.27	1.38	1.29

TABLE 105

COMPARISON OF ORIGINAL POPULATION WITH THE SAMPLE STUDY, PERCENTAGES OF PREFERENCES FOR LANGUAGE

	First Preferences			Combined 1,2,3 Preferences		
	Boys	Girls	Boys and Girls	Boys	Girls	Boys and Girls
Original Population--P_1 (13483)	.43	.70	.56	1.20	1.97	1.58
Sample Study--P_2 (1694)	.47	.82	.70	1.12	2.04	1.33
Difference $P_1 - P_2$	.04	.12	.14	.08	.07	.25
S.E. P_1	.10	.10	.10	.10	.10	.10
S.E. P_2	.40	.40	.40	.40	.40	.40
S.E. Diff.	.41	.41	.41	.41	.41	.41
Critical Ratio	.097	.292	.341	.195	.170	.609

TABLE 106

COMPARISON OF ORIGINAL FORMULATION WITH THE SAMPLE STUDY, PERCENTAGES OF PREFERENCES FOR LANGUAGE

	First Preferences		Combined 1,2,3 Preferences	
	Boys	Girls	Boys	Girls
Original Population--P_1 (1965)	.43	.70	1.00	1.68
Sample Study--S_2 (1984)	.47	.82	1.15	1.83
Difference $P_1 - P_2$	.04	.12	.08	.15
S.E. P_1	.10	.10	.10	.07
S.E. S_2	.10	.10	.10	.07
S.E. Diff.	.14	.14	.14	.10
Critical Ratio	.286	.843	.795	1.470

TABLE 106

COMPARISON OF ORIGINAL POPULATION WITH THE SAMPLE STUDY, PERCENTAGES OF PREFERENCES FOR SPELLING

	First Preferences			Combined 1,2,3 Preferences		
	Boys	Girls	Boys and Girls	Boys	Girls	Boys and Girls
Original Population--P_1 (13483)	7.44	11.48	9.38	11.59	14.98	13.22
Sample Study--P_2 (1694)	6.72	12.02	9.38	11.60	14.91	13.26
Difference $P_1 - P_2$	.72	.54	0.00	.01	.07	.04
S.E. P_1	.10	.10	.10	.10	.10	.10
S.E. P_2	.60	.80	.70	.80	.90	.80
S.E. Diff.	.60	.80	.70	.80	.90	.80
Critical Ratio	1.200	.674	.000	.012	.077	.050

TABLE 108

COMPARISON OF OPTIONAL POSTULATES WITH SAMPLE STUDY, PREFERENCES OF PROFESSIONAL FOR BUILDING

	Pilot Preferences			Combined U.S.A. Preferences		
	Boys	Girls	Boys and Girls	Boys	Girls	Boys and Girls
Original Postulate--I (1883)	7.44	11.48	8.58	11.68	14.38	12.58
Sample Study--P_2 (1928)	6.72	10.52	8.58	11.80	14.91	12.80
Difference $P_1 - P_2$	.72	.96	0.00	.12	.47	.40
S.E. P_1	.70	.70	.70	.80	.80	.80
S.E. P_2	.60	.60	.70	.80	.80	.80
S.E. Diff.	.92	.92	.00	.00	.00	.00
Critical Ratio	1.200	.870	.000	.870	.470	.000

Summary of Representativeness of the Sample

The foregoing tables have been set up for the purpose of comparing the percentages of preferences in the initial population with the percentages of preferences in the sample study. The critical ratio technique has been applied to ascertain degrees of significance of the differences between the percentages of preferences. As in the treatment of all critical ratios in this investigation, the criterion level of 2.576 has been established, which is the 1 per cent level of confidence. This would mean that any critical ratio in these comparisons of percentages would have to exceed the 2.576 mark to indicate any significant difference between the percentages of preferences of the comparative groups.

Examination of Tables 103, 104, 105, and 106 reveals that, of the twenty-four critical ratios, not a single one has reached or exceeded the criterion level of 2.576. The conclusion to be drawn from this finding is the fact that, in each set of percentage comparisons, the two groups--population and sample--are not significantly different. This, in turn, leads to the belief that the sample study is fully representative of the original population. This conclusion establishes the hypothesis that all findings and results derived from the sample study will be similarly applicable to the original population.

Summary of Representativeness of the Sample

The foregoing tables have been set up for the purpose of comparing the percentages of preferences in the initial population with the percentages of preferences in the sample study. The critical ratio technique has been applied to ascertain degrees of significance of the differences between the percentages of preferences. As in the treatment of all critical ratios in this investigation, the criterion level of 2.576 has been established, which is the 1 per cent level of confidence. This would mean that any critical ratio in these comparisons of percentages would have to exceed the 2.576 mark to indicate any significant difference between the percentages of preferences of the comparative groups.

Examination of Tables 103, 104, 105, and 106 reveals that, of the twenty-four critical ratios, not a single one has reached or exceeded the criterion level of 2.576. The conclusion to be drawn from this finding is the fact that, in each set of percentage comparisons, the two groups--population and sample--are not significantly different. This, in turn, leads to the belief that the sample study is truly representative of the original population. This conclusion establishes the hypothesis that all findings and results derived from the sample study will be similarly applicable to the original population.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

The purpose of this study was to determine the relationships existing between subject preferences and subject achievement. The data were analyzed to ascertain:

1. Comparisons of the preferences of high achievement groups with the preferences of low achievement groups.

2. Comparisons of the achievement of preference groups with the achievement of non-preference groups.

On the basis of chronological age and composite achievement, equated groups of boys and girls were formed. All data reported are based upon 847 boys and 847 girls comprising these two groups.

Summary

Preferences of First Achievement Quartile vs. Preferences of Fourth Achievement Quartile

A. By Preferences:

1. First Preferences--in comparing the percentages of first preferences, all subjects, of the first achievement quartile with the percentages of first preferences, all subjects, of the fourth achievement quartile, twenty-four critical ratios were computed. The mean of these critical ratios

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

The purpose of this study was to determine the relationships existing between subject preferences and subject achievement. The data were analyzed to ascertain:

1. Comparisons of the preferences of high achievement groups with the preferences of low achievement groups.

2. Comparisons of the achievement of preference groups with the achievement of non-preference groups.

On the basis of chronological age and composite achievement, equated groups of boys and girls were formed. All data reported are based upon 847 boys and 847 girls comprising these two groups.

Summary

Preferences of First Achievement Quartile vs. Preferences of Fourth Achievement Quartile

A. By Preferences:

1. First Preferences--in comparing the percentages of first preferences, all subjects, of the first achievement quartile with the percentages of first preferences, all subjects, of the fourth achievement quartile, twenty-four critical ratios were computed. The mean of these critical ratios

was 2.058. This is not statistically significant and indicates there are 96 chances out of 100 that there is true difference between percentages of first preferences.

2. Combined First, Second, Third Preferences--in comparing the percentages of combined first, second, third preferences, all subjects, of the first achievement quartile with the percentages of combined first, second, third preferences, all subjects, of the fourth achievement quartile, twenty-four critical ratios were computed. The mean of these critical ratios was 3.565. This is a significant difference and indicates there are better than 99 chances out of 100 that there is a true difference between the two quartiles, on the basis of percentages of combined first, second, third preferences, in favor of the first quartile.

B. By Sexes:

1. Boys--in comparing the percentages of all preferences, all subjects, boys, of the first achievement quartile with the percentages of all preferences, all subjects, boys, of the fourth achievement quartile, sixteen critical ratios were computed. The mean of these critical ratios was 2.775. This is a significant difference and indicates there are better than 99 chances out of 100 that there is a true difference between the two quartiles, on the basis of the percentages of all preferences, boys, in favor of the first quartile.

2. Girls--in comparing the percentages of all preferences, all subjects, girls, of the first achievement quartile with the percentages of all preferences, all subjects, girls, of the fourth achievement quartile, sixteen critical ratios were computed. The mean of these critical ratios was 1.573. This is not a significant difference and indicates there are only about 88 chances out of 100 that there is a true difference between the two quartiles.

C. By Subjects:

1. Reading--in comparing all preferences for reading of the first quartile with all preferences for reading of the fourth quartile, eighteen critical ratios were computed. The mean of these critical ratios was 2.386, which is not statistically significant.

2. Arithmetic--in comparing all preferences for arithmetic of the first quartile with all preferences for arithmetic of the fourth quartile, eighteen critical ratios were computed. The mean of these critical ratios was 3.337. This is statistically significant and indicates that there are better than 99 chances out of 100 that there is true difference between the two groups, in favor of the first quartile.

3. Language--in comparing all preferences for language of the first quartile with all preferences for language of the fourth quartile, six critical ratios were computed. The mean of these critical ratios was .316, which is not

2. Girls--in comparing the percentages of all preferences, all subjects, girls, of the first achievement quartile with the percentages of all preferences, all subjects, girls, of the fourth achievement quartile, sixteen critical ratios were computed. The mean of these critical ratios was 1.873. This is not a significant difference and indicates there are only about 88 chances out of 100 that there is a true difference between the two quartiles.

C. By Subjects:

1. Reading--in comparing all preferences for reading of the first quartile with all preferences for reading of the fourth quartile, eighteen critical ratios were computed. The mean of these critical ratios was 2.386, which is not statistically significant.

2. Arithmetic--in comparing all preferences for arithmetic of the first quartile with all preferences for arithmetic of the fourth quartile, eighteen critical ratios were computed. The mean of these critical ratios was 3.387. This is statistically significant and indicates that there are better than 99 chances out of 100 that there is true difference between the two groups, in favor of the first quartile.

3. Language--in comparing all preferences for language of the first quartile with all preferences for language of the fourth quartile, six critical ratios were computed. The mean of these critical ratios was .316, which is not

statistically significant.

4. Spelling--in comparing all preferences for spelling of the first quartile with all preferences for spelling of the fourth quartile, six critical ratios were computed. The mean of these critical ratios was 2.251, which is not statistically significant.

Achievement of Preference Groups vs. Achievement of Non-Preference Groups

A. By Preferences:

1. First Preferences--in comparing the mean scores, all subjects, of the first preference groups with the mean scores, all subjects, of the non-preference groups, twenty-four critical ratios were computed. The mean critical ratio was 2.314, which is not statistically significant. It indicates there are about 97 chances out of 100 that there is a true difference in the mean scores of the first preference groups and the non-preference groups.

2. Combined First, Second, Third Preferences--in comparing the mean scores, all subjects, of the combined first, second, third preference groups with the mean scores, all subjects, of the non-preference groups, twenty-four critical ratios were computed. The mean critical ratio was 4.135, which is statistically significant. This indicates there is a true difference between the mean scores of the preference groups and the non-preference groups, in favor of the

preference groups.

B. By Sexes:

1. Boys--in comparing the mean scores, all subjects, boys, of the preference groups with the mean scores, all subjects, boys, of the non-preference groups, sixteen critical ratios were computed. The mean critical ratio was 2.950, which is statistically significant. This indicates there is a true difference between the mean scores of the boys' preference groups and the boys' non-preference groups, in favor of the boys' preference groups.

2. Girls--in comparing the mean scores, all subjects, girls, of the preference groups with the mean scores, all subjects, girls, of the non-preference groups, sixteen critical ratios were computed. The mean critical ratio was 1.560, which is not statistically significant. There are only about 88 chances out of 100 that there is a true difference between the means of these two groups.

C. By Subjects:

1. Reading--in comparing the mean scores of all reading tests, preference groups, with the mean scores of all reading tests, non-preference groups, eighteen critical ratios were computed. The mean critical ratio was 2.392. This is not statistically significant but it does indicate that there are about 98 chances in 100 that there is a true difference in means of the preference and the non-preference groups,

in favor of the preference groups.

2. Arithmetic--in comparing the mean scores of all arithmetic tests, preference groups, with the mean scores of all arithmetic tests, non-preference groups, eighteen critical ratios were computed. The mean critical ratio was 3.750. This is statistically significant and indicates there is a true difference between the mean arithmetic scores of the preference groups and the mean arithmetic scores of the non-preference groups, in favor of the preference groups.

3. Language--in comparing the mean scores of the language tests, preference groups, with the mean scores of the language tests, non-preference groups, six critical ratios were computed. The mean critical ratio was .305. This is not statistically significant and indicates there is no true difference between the means of the two groups.

4. Spelling--in comparing the mean scores of the spelling test, preference groups, with the mean scores of the spelling test, non-preference groups, six critical ratios were computed. The mean critical ratio was 2.675. This is statistically significant and indicates that there is a true difference between the mean scores of the preference group and the mean scores of the non-preference group, in favor of the preference group.

2. Arithmetic--in comparing the mean scores of all arithmetic tests, preference groups, with the mean scores of all arithmetic tests, non-preference groups, eighteen critical ratios were computed. The mean critical ratio was 3.750. This is statistically significant and indicates there is a true difference between the mean arithmetic scores of the preference groups and the mean arithmetic scores of the non-preference groups, in favor of the preference groups.

3. Language--in comparing the mean scores of the language tests, preference groups, with the mean scores of the language tests, non-preference groups, six critical ratios were computed. The mean critical ratio was .308. This is not statistically significant and indicates there is no true difference between the means of the two groups.

4. Spelling--in comparing the mean scores of the spelling test, preference groups, with the mean scores of the spelling test, non-preference groups, six critical ratios were computed. The mean critical ratio was 2.678. This is statistically significant and indicates that there is a true difference between the mean scores of the preference group and the mean scores of the non-preference group, in favor of the preference group.

Tabulation of Results

To indicate the results of the two foregoing summaries the following table has been constructed.

TABLE 107

SIGNIFICANT DIFFERENCES BETWEEN COMPARISON GROUPS

		First Achievement Quartile vs. Fourth Achievement Quartile	Preference vs. Non-Preference
Preference	First	No	No
	1st,2nd,3rd	Yes	Yes
Sex	Boys	Yes	Yes
	Girls	No	No
Subjects	Reading	No	No
	Arithmetic	Yes	Yes
	Language	No	No
	Spelling	No	Yes

This table is read as follows: the two vertical columns indicate the two separate analyses of the data, the incidence of preference in the first achievement quartile vs. the incidence of preference in the fourth achievement quartile, and the achievement of preference groups vs. the achievement of non-preference groups. The horizontal divisions indicate the detailed analyses of each area: by preferences, by sexes,

Tabulation of Results

To indicate the results of the two foregoing summaries the following table has been constructed.

TABLE IOY

SIGNIFICANT DIFFERENCES BETWEEN COMPARISON GROUPS

		First Achievement Quartile vs. Fourth Achievement Quartile	Preference vs. Non-Preference
Preference	First 1st,2nd,3rd	No Yes	No Yes
Sex	Boys Girls	Yes No	Yes No
Subjects	Reading Arithmetic Language Spelling	No Yes No No	No Yes No Yes

This table is read as follows: the two vertical columns indicate the two separate analyses of the data, the incidence of preference in the first achievement quartile vs. the incidence of preference in the fourth achievement quartile, and the achievement of preference groups vs. the achievement of non-preference groups. The horizontal divisions indicate the detailed analyses of each area: by preference, by sexes,

and by subjects. The entries in the table indicate the presence or absence of significant differences between the respective comparative groups.

Conclusions

1. In determining the relationships existing between the preferences of high achievement groups and the preferences of low achievement groups, only three significant differences were found out of a possible eight. This would seem to indicate that this relationship is not sufficiently high to be of predictive value.

2. In determining the relationships existing between the achievement of preference groups and the achievement of non-preference groups, only four significant differences were found out of a possible eight. Again, this would seem to indicate that this relationship is not sufficiently high to be of predictive value.

3. In analyzing the relationships in the area of first preferences, no significant differences were found. This would seem to indicate the fact that the value of expressions of first preference is negligible.

4. In determining the relationships in the area of combined first, second, and third preferences, significant differences were found in both cases. This would lead to a belief that the combining of these preferences does contain pertinent implications of value for the prediction of

and by subjects. The entries in the table indicate the presence or absence of significant differences between the respective comparative groups.

Conclusions

1. In determining the relationships existing between the preferences of high achievement groups and the preferences of low achievement groups, only three significant differences were found out of a possible eight. This would seem to indicate that this relationship is not sufficiently high to be of predictive value.

2. In determining the relationships existing between the achievement of preference groups and the achievement of non-preference groups, only four significant differences were found out of a possible eight. Again, this would seem to indicate that this relationship is not sufficiently high to be of predictive value.

3. In analyzing the relationships in the area of first preferences, no significant differences were found. This would seem to indicate the fact that the value of expressions of first preference is negligible.

4. In determining the relationships in the area of combined first, second, and third preferences, significant differences were found in both cases. This would lead to a belief that the combining of these preferences does contain pertinent implications of value for the prediction of

educational achievement.

5. In both instances, significant differences were found in favor of boys of high achievement and boys of preference groups. This leads to a conclusion that there are significant relationships between preference and achievement for boys.

6. In the case of the girls, however, no significant differences were found in the two analyses, a finding which would lead to the conclusion that there is no pertinent relationship between preference and achievement for girls.

7. In the subject areas, no significant differences were found in reading and in language. This development leads to a belief that the relationships between preference and achievement for these subjects are negligible.

8. In arithmetic, significant differences were found in both analyses. From this finding it can be concluded that there is a relationship between preference and achievement in arithmetic which is of sufficient degree to be of educational value.

9. In spelling, no significant difference was found in analyzing the preference of high achievers and the preference of low achievers, which would seem to eliminate this relationship from further consideration. However, a significant difference was found between the achievement of the preference group and the achievement of the non-preference group, a finding which would seem to indicate the presence of a

educational achievement.

5. In both instances, significant differences were found in favor of boys of high achievement and boys of preference groups. This leads to a conclusion that there are significant relationships between preference and achievement for boys.

6. In the case of the girls, however, no significant differences were found in the two analyses, a finding which would lead to the conclusion that there is no pertinent relationship between preference and achievement for girls.

7. In the subject areas, no significant differences were found in reading and in language. This development leads to a belief that the relationships between preference and achievement for these subjects are negligible.

8. In arithmetic, significant differences were found in both analyses. From this finding it can be concluded that there is a relationship between preference and achievement in arithmetic which is of sufficient degree to be of educational value.

9. In spelling, no significant difference was found in analyzing the preference of high achievers and the preference of low achievers, which would seem to eliminate this relationship from further consideration. However, a significant difference was found between the achievement of the preference group and the achievement of the non-preference group, a finding which would seem to indicate the presence of a

useful relationship in this particular area.

10. In summarizing the conclusions to be drawn from this study, three developments appear to stand out:

a. The relationships between preference and achievement are not sufficiently conclusive to warrant predictive applications of these relationships.

b. However, despite the fact that these relationships failed to be significant, the fact remains, none-the-less, that there are decided trends, in favor of the preference groups, to make these relationships of value in educational planning.

c. In certain specific areas, notably, with boys, with combined first, second, and third preferences, and in arithmetic and in spelling, significant differences were found which indicate conclusive relationships between preference and achievement, in favor of preference. These developments would seem to imply the necessity for consideration of these established relationships in educational planning.

11. Since it was the purpose of this study to determine the relationships existing between preferences and achievement, the conclusion becomes inevitable that, in the specific areas where significant relationships have been established, full consideration must be given to these findings in terms of curriculum planning and teaching methods. The fact remains that where these relationships have been found conclusive,

useful relationship in this particular area.

10. In summarizing the conclusions to be drawn from this study, three developments appear to stand out:

a. The relationships between preference and achievement are not sufficiently convincing to warrant predictive applications of these relationships.

b. However, despite the fact that these relationships failed to be significant, the fact remains, none-the-less, that there are decided trends, in favor of the preference groups, to make these relationships of value in educational planning.

c. In certain specific areas, notably, with boys, with combined first, second, and third preferences, and in arithmetic and in spelling, significant differences were found which indicate conclusive relationships between preference and achievement, in favor of preference. These developments would seem to imply the necessity for consideration of these established relationships in educational planning.

11. Since it was the purpose of this study to determine the relationships existing between preferences and achievement, the conclusion becomes inevitable that, in the specific areas where significant relationships have been established, full consideration must be given to these findings in terms of curriculum planning and teaching methods. The fact remains that where these relationships have been found conclusive,

it would be a matter of educational extravagance to fail to incorporate the implications of these results into classroom procedure.

CHAPTER SIX

SUGGESTIONS FOR FURTHER STUDY

This investigation has raised more questions than it has answered. It was the professed purpose of this study to determine the relationships existing between preference and achievement. Despite the fact that certain limited conclusions have evolved, it still remains that there is a wide range of potential research in this all-important area of the discovery and the uses of the educational preferences of children. Some suggestions for further study follow:

1. A similar study, using the full range of subject areas, rather than the limitation to the skills subjects.

2. A follow-up study, using the same population, to determine the extent of carry-over of the expressions of preference and the measures of achievement.

3. An investigative study to analyze the causal factors which go to make up the expressions of subject preferences.

4. The effect of non-preference on school progress.

5. An experimental study to compare teaching methods ideally used with preference groups with teaching methods ideally used with non-preference groups.

6. An investigative study to ascertain how preferences

CHAPTER SIX

SUGGESTIONS FOR FURTHER STUDY

This investigation has raised more questions than it has answered. It was the professed purpose of this study to determine the relationships existing between preference and achievement. Despite the fact that certain limited conclusions have evolved, it still remains that there is a wide range of potential research in this all-important area of the discovery and the uses of the educational preferences of children. Some suggestions for further study follow:

1. A similar study, using the full range of subject areas, rather than the limitation to the skills subjects.

2. A follow-up study, using the same population, to determine the extent of carry-over of the expressions of preference and the measures of achievement.

3. An investigative study to analyze the causal factors which go to make up the expressions of subject preferences.

4. The effect of non-preference on school progress.

5. An experimental study to compare teaching methods ideally used with preference groups with teaching methods ideally used with non-preference groups.

6. An investigative study to ascertain how preferences

for the different skills subjects affect school progress in the other subject areas.

7. Experimental work in basing school curriculum planning wholly on preference factors.

8. A study of the preference factors of slow learning groups.

9. A study of the preference factors of educationally accelerated groups.

for the different skills subjects affect school progress in the other subject areas.

7. Experimental work in basing school curriculum planning wholly on preference factors.

8. A study of the preference factors of slow learning groups.

9. A study of the preference factors of educationally accelerated groups.

BIBLIOGRAPHY

Baisden, Leo B., and William J. Burkhard. "Children's Preferences in School Subjects and the Curriculum," Children's Interests, Twelfth Yearbook. Sacramento: The California Elementary School Principals' Association, 1940.

Blanchard, Helen C. "Subject Preferences in the Fifth Grade." Unpublished Master's thesis. Boston: Boston University, 1948. 95 pp.

Bowden, A. O., and Irving R. Melbo. Social Psychology of Education. New York: McGraw-Hill Book Company, 1937. 237 pp.

Bridges, J. W., and V. M. Dollinger. "The Correlation Between Interests and Abilities in College Courses," Psychological Review, 27:309-314, July, 1920.

Burton, William H. The Guidance of Learning Activities. New York: D. Appleton-Century Company, 1944. 595 pp.

Caswell, Hollis L. Education in the Elementary School. New York: American Book Company, 1942. 308 pp.

Columba, M. "A Study of Interests and Their Relations to Other Factors of Achievement in the Elementary School Subjects," Catholic University of America, Educational Research Bulletin, Vol. I, No. 7, 1926. 35 pp.

Corey, Stephen M., and Walter S. Monroe. "Developing Interests," Encyclopedia of Educational Research. New York: The Macmillan Company, 1941. Pp. 728-730.

Cusack, Mary E. "An Analysis of the Influence of Achievement on Preference for Reading and Arithmetic." Unpublished Master's thesis. Boston: Boston University, 1948. 17 pp.

Davidson, Percy E. "The Stability of Interests in School Studies," School and Society, 20:221-222, August 16, 1924.

Dewey, John. Interest and Effort in Education. Boston: Houghton Mifflin Company, 1913. 96 pp.

Dunlap, Jack W. "Preferences as Indicators of Achievement," The Journal of Educational Psychology, 26:411-415, September, 1935.

BIBLIOGRAPHY

Baladen, Leo B., and William J. Burkhard. "Children's Preferences in School Subjects and the Curriculum," Children's Interests, Twelfth Yearbook. Sacramento: The California Elementary School Principals' Association, 1940.

Blanchard, Helen C. "Subject Preferences in the Fifth Grade." Unpublished Master's thesis. Boston: Boston University, 1948. 98 pp.

Bowden, A. O., and Irving R. Melbo. Social Psychology of Education. New York: McGraw-Hill Book Company, 1937. 537 pp.

Bridges, J. W., and V. K. Dollinger. "The Correlation Between Interests and Abilities in College Courses," Psychological Review, 27:309-314, July, 1920.

Burton, William H. The Guidance of Learning Activities. New York: D. Appleton-Century Company, 1944. 389 pp.

Caswell, Hollis L. Education in the Elementary School. New York: American Book Company, 1942. 308 pp.

Columba, M. "A Study of Interests and Their Relations to Other Factors of Achievement in the Elementary School Subjects," Catholic University of America, Educational Research Bulletin, Vol. I, No. 7, 1926. 36 pp.

Corey, Stephen M., and Walter S. Monroe. "Developing Interests," Encyclopedia of Educational Research. New York: The Macmillan Company, 1941. Pp. 728-730.

Cusack, Mary E. "An Analysis of the Influence of Achievement on Preference for Reading and Arithmetic." Unpublished Master's thesis. Boston: Boston University, 1948. 17 pp.

Davidson, Percy E. "The Stability of Interests in School Studies," School and Society, 20:821-822, August 16, 1924.

Dewey, John. Interest and Effort in Education. Boston: Houghton Mifflin Company, 1913. 96 pp.

Dunlap, Jack W. "Preferences as Indicators of Achievement," The Journal of Educational Psychology, 28:411-418, September, 1937.

Eginton, David P. "Discovering Pupil Interest," Journal of Education, 106:308-310, June 5, 1933.

Fitzpatrick, F. L. Science Interests. New York: Bureau of Publications, Teachers College, Columbia University, 1936. 148 pp.

Frederick, O. I. "Pupil Interests and Needs as a Basis for Curriculum Development," Curriculum Journal, 9:321-322, November, 1938.

Fryer, Douglas. "Interests and Ability in Educational Guidance," Journal of Educational Research, 26:27-39, June, 1927.

_____. The Measurement of Interests. New York: Henry Holt and Company, 1935. 252 pp.

Gardner, George H., Jr. "Differences in Subject Preferences of High Achievement Readers and Low Achievement Readers." Unpublished Master's thesis. Boston: Boston University, 1948. 34 pp.

Garretson, O. K. Relationships Between Expressed Preferences and Curricular Abilities of Ninth Grade Boys. Teachers College Contribution to Education, No. 396. New York: Bureau of Publications, Teachers College, Columbia University, 1930. 73 pp.

Hartmann, George W. "Interests, Attitudes, and Ideals," in Charles E. Skinner, editor, Educational Psychology. New York: Prentice-Hall, Inc., 1936. Pp. 88-113.

Hildreth, Gertrude. Child Growth through Education. New York: The Ronald Press Company, 1948. 430 pp.

Hockett, John A. "Children's Interest and the Educational Program," Children's Interests, Twelfth Yearbook. Sacramento: The California Elementary School Principals' Association, 1940.

Holmes, Ethel E. "School Subjects Preferred by Children," Appraising the Elementary School Program. Sixteenth Yearbook, Department of Elementary School Principals. Washington: National Education Association, 1937.

Hopkins, L. Thomas. Interaction, The Democratic Process. Boston: D. C. Heath and Company, 1941. 460 pp.

James, William. Talks to Teachers. New York: Henry Holt and Company, 1916. 301 pp.

Jersild, Arthur T. Child Development and the Curriculum. New York: Bureau of Publications, Teachers College, Columbia University, 1946. 236 pp.

_____, and Ruth J. Tasch. Children's Interests. New York: Bureau of Publications, Teachers College, Columbia University, 1949. 173 pp.

King, Irving, and Morris Addelstein. "The Permanence of Interests and Their Relation to Abilities," School and Society, 6:359-360, September 10, 1917.

Klein, Adolph. "Failure and Subjects Liked and Disliked," High Points, 21:22-25, January, 1939.

Lane, Robert H. The Progressive Elementary School. Boston: Houghton Mifflin Company, 1938. 197 pp.

Langlie, T. A. "Interests and Scholastic Proficiency," The Personnel Journal, 9:246-250, October, 1930.

Lee, J. Murray, and Dorris May Lee. The Child and His Curriculum. New York: D. Appleton-Century Company, 1940. 631 pp.

Melbo, Irving R. "A Review of the Literature on Children's Interests," Children's Interests, Twelfth Yearbook. Sacramento: The California Elementary School Principals' Association, 1940.

Meredith, George H. "Utilizing Pupil Interests in Curriculum Making," California Journal of Elementary Education, 1:32-36, August, 1936.

Miel, Alice. Changing the Curriculum. New York: D. Appleton-Century Company, 1946. 233 pp.

Mills, Frederick C. Statistical Methods, Revised. New York: Henry Holt and Company, 1938. 425 pp.

Pressey, S. L. Psychology and the New Education. New York: Harper and Brothers, 1933. 585 pp.

Thorndike, Edward L. "The Permanence of Interests and Their Relations to Abilities," in Meyer Brookfield, editor, Readings in Vocational Guidance. New York: Ginn and Company, 1915. Pp. 386-395.

James, William. *Talks to Teachers*. New York: Henry Holt and Company, 1916. 301 pp.

Jersild, Arthur T. *Child Development and the Curriculum*. New York: Bureau of Publications, Teachers College, Columbia University, 1946. 336 pp.

_____, and Ruth J. Tasch. *Children's Interests*. New York: Bureau of Publications, Teachers College, Columbia University, 1949. 173 pp.

King, Irving, and Morris Adelstein. "The Permanence of Interests and Their Relation to Abilities." *School and Society*, 6:389-390, September 10, 1917.

Klein, Adolph. "Values and Subjects Liked and Disliked," *High Points*, 21:22-26, January, 1939.

Lane, Robert H. *The Progressive Elementary School*. Boston: Houghton Mifflin Company, 1938. 137 pp.

Langlie, T. A. "Interests and Scholastic Proficiency," *The Personnel Journal*, 9:240-250, October, 1930.

Lee, J. Murray, and Dorris May Lee. *The Child and His Curriculum*. New York: D. Appleton-Century Company, 1940. 681 pp.

Melbo, Irving R. "A Review of the Literature on Children's Interests," *Children's Interests*. Twelfth Yearbook. Sacramento: The California Elementary School Principals' Association, 1940.

Meredith, George E. "Utilizing Pupil Interests in Curriculum Making," *California Journal of Elementary Education*, 1:32-36, August, 1932.

Miel, Alice. *Changing the Curriculum*. New York: D. Appleton-Century Company, 1946. 252 pp.

Mills, Frederick C. *Statistical Methods*. Revised. New York: Henry Holt and Company, 1938. 429 pp.

Pressey, S. L. *Psychology and the New Education*. New York: Harper and Brothers, 1933. 588 pp.

Thorndike, Edward L. "The Permanence of Interests and Their Relations to Abilities," In Meyer Brookfield, editor, *Readings in Vocational Guidance*. New York: Ginn and Company, 1919. Pp. 386-389.

_____. "Early Interests: Their Permanence and Relation to Abilities," School and Society, 5:178-179, February 10, 1917.

_____. "The Correlation Between Interests and Abilities in College Courses," Psychological Review, 28:374-376, September, 1921.

_____. Adult Interests. New York: The Macmillan Company, 1935. 252 pp.

Richardson, Clarence O. "The Relationship Between Knowledge of Current Events and Preference for Social Studies on a Fifth Grade Level." Unpublished Master's thesis. Boston: Boston University, 1948. 62 pp.

Ross, Edward A. The Outlines of Sociology. New York: The Century Company, 1933. 238 pp.

Spalding, Francis T. Interest in Learning. Department of Secondary School Principals, Bulletin 74, Vol. 22:52-54. Washington: National Education Association, April, 1938.

Wheeler, Raymond Holder, and Francis Theodore Perkins. Principles of Mental Development. New York: Thomas Y. Crowell Publishing Company, 1932. 513 pp.

APPENDIX A

Unpublished Master's Theses in the Subject Preference Study, Boston University School of Education, 1948.

APPENDIX A

Unpublished Master's Theses in the Subject Preference Study, Boston University School of Education, 1968.

Unpublished Master's Theses in the Subject Preference Study,

Boston University School of Education, 1948

Blanchard, Helen C. "Subject Preferences in the Fifth Grade."

Commito, Ado. "Preferences for Content, Skills, and Aesthetic Subjects in Five Communities."

Cusack, Mary E. "An Analysis of the Influence of Achievement on Preference for Reading and Arithmetic."

Earley, William L., Jr. "An Analysis of the Influences of Intelligence and Age Differences upon Fifth Grade Children's Preferences for School Subjects."

Englesby, George H. "High Morale Classrooms in the Subject Preference Study."

Gardner, George H. "Differences in Subject Preferences of High-Achievement Readers and Low-Achievement Readers."

Kinsley, Katherine M. "Children's Evaluation of the Difficulty of Well-Liked School Subjects."

Mills, Francis D. "An Analysis of the Subject Preferences of 3,403 Third, Fourth, Fifth, and Sixth Grade Pupils in the Public Schools of Quincy, Massachusetts."

Skahill, Eleanor M. "An Analysis of Sex Differences in Fifth Grade Children's Preferences for School Subjects."

Sprague, Helen M. "An Analysis of Fifth Grade Pupils' Subject Preferences in Relation to Their Teachers' Preferences."

Sullivan, Esther M. "Children's Evaluation of the Difficulty of Disliked School Subjects."

Thompson, Francis L. "The Reliability of the Check List Used in the Subject Preference Study."

Wolffer, William A. "Techniques and Practices Used in Twenty Social Studies Classrooms."

Unpublished Master's Theses in the Subject Preference Study.

Boston University School of Education, 1948

Blanchard, Helen C. "Subject Preferences in the Fifth Grade."

Committo, Ada. "Preferences for Content, Skills, and Aesthetic Subjects in Five Communities."

Cusack, Mary E. "An Analysis of the Influence of Achievement on Preference for Reading and Arithmetic."

Farley, William L., Jr. "An Analysis of the Influences of Intelligence and Age Differences upon Fifth Grade Children's Preferences for School Subjects."

Hagleby, George H. "High Marks Classrooms in the Subject Preference Study."

Gardner, George R. "Differences in Subject Preferences of High-Achievement Readers and Low-Achievement Readers."

Kinsley, Katherine M. "Children's Evaluation of the Difficulty of Well-Liked School Subjects."

Mills, Francis D. "An Analysis of the Subject Preferences of 3,403 Third, Fourth, Fifth, and Sixth Grade Pupils in the Public Schools of Quincy, Massachusetts."

Skahill, Eleanor M. "An Analysis of Sex Differences in Fifth Grade Children's Preferences for School Subjects."

Sprague, Helen M. "An Analysis of Fifth Grade Pupils' Subject Preferences in Relation to Their Teachers' Preferences."

Sullivan, Esther M. "Children's Evaluation of the Difficulty of Disliked School Subjects."

Thompson, Francis L. "The Reliability of the Check List Used in the Subject Preference Study."

Wolfer, William A. "Techniques and Practices Used in Twenty Social Studies Classrooms."

APPENDIX B

Tables Showing the Rank Order of Subject Preferences in Fifth Grades in New England: Taken from the Helen C. Blanchard Unpublished Master's Thesis, "Subject Preferences in the Fifth Grade," Boston University School of Education, 1948.

APPENDIX B

Tables Showing the Rank Order of Subject Preferences in Fifth Grades in New England: Taken From the Helen O. Hironymus Unpublished Master's Thesis, "Subject Preferences in the Fifth Grade," Boston University School of Education, 1948.

TABLE 108

RANK ORDER OF SUBJECT PREFERENCES, FIRST CHOICES ONLY, OF 13,483 FIFTH GRADE CHILDREN IN NEW ENGLAND[1]

Boys and Girls	No. of Choices	Per Cent	Boys	No. of Choices	Per Cent	Girls	No. of Choices	Per Cent
Reading	3060	22.70	Arithmetic	1597	23.04	Reading	1531	23.37
Arithmetic	2998	22.24	Reading	1529	22.05	Arithmetic	1401	21.39
Art	2389	17.72	Art	1286	18.55	Art	1103	16.84
Social Studies	1268	9.40	Social Studies	834	12.03	Music	820	12.52
Spelling	1268	9.40	Spelling	516	7.44	Spelling	752	11.48
Music	1241	9.20	Science	425	6.13	Social Studies	434	6.62
Science	609	4.52	Music	421	6.07	Science	184	2.81
Health Ed.	316	2.34	Health Ed.	195	2.81	Penmanship	159	2.43
Penmanship	258	1.91	Penmanship	99	1.43	Health Ed.	121	1.85
Language	76	.56	Language	30	.43	Language	46	.70

[1]Helen C. Blanchard, "Subject Preferences in the Fifth Grade," Unpublished Master's thesis (Boston: Boston University School of Education, 1948).

TABLE 108

RANK ORDER OF SUBJECT PREFERENCES, FIRST CHOICES ONLY, OF 13,465 FIFTH GRADE CHILDREN IN NEW ENGLAND[1]

Boys and Girls	No. of Choices	Per Cent	Boys	No. of Choices	Per Cent	Girls	No. of Choices	Per Cent
Reading	3060	22.70	Arithmetic	1897	23.04	Reading	1531	23.37
Arithmetic	2998	22.24	Reading	1529	22.06	Arithmetic	1401	21.39
Art	2380	17.72	Art	1286	18.65	Art	1103	16.84
Social Studies	1268	9.40	Social Studies	834	12.03	Music	820	12.52
Spelling	1258	9.40	Spelling	516	7.44	Spelling	752	11.48
Music	1241	9.20	Science	428	6.13	Social Studies	434	6.62
Science	609	4.52	Music	421	6.07	Science	184	2.81
Health Ed.	316	2.34	Health Ed.	198	2.81	Penmanship	159	2.43
Penmanship	256	1.91	Penmanship	93	1.43	Health Ed.	121	1.85
Language	76	.56	Language	30	.43	Language	46	.70

[1]Helen C. Blanchard, "Subject Preferences in the Fifth Grade," Unpublished Master's thesis (Boston: Boston University School of Education, 1946).

TABLE 109

RANK ORDER OF SUBJECT PREFERENCES, FIRST, SECOND, AND THIRD CHOICES COMBINED OF 13,483 FIFTH GRADE CHILDREN IN NEW ENGLAND[2]

Boys and Girls	No. of Choices	Per Cent	Boys	No. of Choices	Per Cent	Girls	No. of Choices	Per Cent
Reading	7177	17.74	Reading	3638	17.50	Reading	3539	18.01
Arithmetic	6811	16.84	Arithmetic	3510	16.88	Arithmetic	3301	16.20
Art	5875	14.52	Art	3172	15.25	Spelling	2945	14.98
Spelling	5347	13.22	Spelling	2411	11.59	Music	2791	14.20
Music	4594	11.36	Music	1803	8.67	Art	2703	13.75
History	2236	5.52	History	1405	6.76	History	831	4.23
Science	2086	5.16	Science	1393	6.70	Penmanship	785	3.99
Social Studies	1573	3.89	Social Studies	1018	4.90	Science	693	3.53
Geography	1419	3.51	Geography	889	4.27	Health Ed.	593	3.02
Penmanship	1347	3.33	Health Ed.	753	3.62	Social Studies	555	2.82
Health Ed.	1346	3.33	Penmanship	553	2.66	Geography	530	2.70
Language	638	1.58	Language	251	1.20	Language	387	1.97

[2] Ibid.

TABLE 109

RANK ORDER OF SUBJECT PREFERENCES, FIRST, SECOND, AND THIRD CHOICES COMBINED OF 13,485 FIFTH GRADE CHILDREN IN NEW ENGLAND[a]

Boys and Girls	No. of Choices	Per Cent	Boys	No. of Choices	Per Cent	Girls	No. of Choices	Per Cent
Reading	7177	17.74	Reading	3838	17.80	Reading	3339	18.01
Arithmetic	6811	16.84	Arithmetic	3510	16.28	Arithmetic	3301	16.80
Art	5879	14.52	Art	3172	14.72	Spelling	2845	14.88
Spelling	5347	13.22	Spelling	2411	11.18	Music	2781	14.20
Music	4694	11.60	Music	1913	8.87	Art	2703	13.75
History	2252	5.52	History	1408	6.76	History	831	4.23
Science	2086	5.16	Science	1393	6.70	Penmanship	785	3.99
Social Studies	1873	3.89	Social Studies	1018	4.90	Science	693	3.53
Geography	1419	3.51	Geography	889	4.27	Health Ed.	582	2.92
Penmanship	1347	3.33	Health Ed.	783	3.68	Social Studies	555	2.82
Health Ed.	1346	3.33	Penmanship	563	2.66	Geography	530	2.70
Language	838	1.38	Language	381	1.80	Language	367	1.87

[a] Ibid.

APPENDIX C

Subject Preference Check List Form

GIRLS AND BOYS: Here is your chance to tell us what your favorite studies are and why you like some studies better than others.

Name _____

School _____

Town _____

Mark with an "X" Girl _____ Boy _____

Teacher's Name _____

COLUMN I	COLUMN II	COLUMN III
DIRECTIONS: Choose your favorite studies from those named. Put 1 before your first choice. Put 2 before your second choice. Put 3 before your third choice. (Mark these 3 choices in Col. I)	DIRECTIONS: Put a circle around the letter which tells how you feel about each study. L--I like it very much. N--I neither like nor dislike it. D--I dislike it very much.	DIRECTIONS: Put a circle around the word which tells whether you think a subject is EASY or HARD.

Col. I		Col. II			Col. III	
	READING	L	N	D	Easy	Hard
	ARITHMETIC	L	N	D	Easy	Hard
	LANGUAGE or ENGLISH	L	N	D	Easy	Hard
	PENMANSHIP or HANDWRITING	L	N	D	Easy	Hard
	SPELLING	L	N	D	Easy	Hard
	GEOGRAPHY	L	N	D	Easy	Hard
	HISTORY	L	N	D	Easy	Hard
	SOCIAL STUDIES	L	N	D	Easy	Hard
	ART or DRAWING	L	N	D	Easy	Hard
	MUSIC	L	N	D	Easy	Hard
	SCIENCE or NATURE STUDY	L	N	D	Easy	Hard
	HEALTH EDUCATION	L	N	D	Easy	Hard

WELLS BINDERY
WALTHAM, MASS.
AUG. 1949

BOSTON UNIVERSITY
1 1719 02561 4449